COMPUTERWORLD

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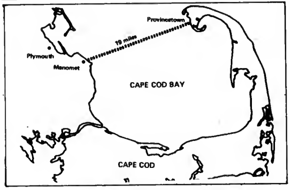

The dotted line shows the approxmiate route that Russell Chaffee, the first person to swim Cape Cod Bay, took. Chaffee, who used a computer to plot tide charts for tha swim, took exactly 14 hours to cross the 19 miles of watar.

First Man to Swim Bay Had Help From Computer

PROVINCETOWN, Mass. – A 41 year old man, who used a computer to plot the tide flows, stepped ashore here Aug. 14, the first person to swim Cape Cód Bay nonstop.

Russell Chaffee, an 8th and 10th grade general mathemstics teacher from Sayre, Pa., came ashore at 6:40 p.m., exactly 14 hours after stepping into the water off Manomet Beach in Plymouth for the 19 mile swim. Wearing goggles and blue trunks, Chaffee was cheered by a crowd of about 50 persons as he stumbled from the water. He had been accompanied across the bay by an 18 foot motorized dory.

A stocky, barrel chested 220 pounder, he had eaten a double portion of ham and scrambled eggs before the swim. He drank an eight pack of softdrinks and ate a box of sugar cookies during it.

Summer Course Project

Chaffee had plotted his course on the basis of a study of Bsy tidal flows he made earlier this summer while taking a course in computer programming at Trinity College in Hartford, Conn. The course had required several projects of the students, and this was one of his.

Chaffee told *Computerworld* that the information, printed out for 5 minute intervals, turned out to be a sine curve. Written from a very simple program that did not take waves or wind into consideration, the information told him that the best course would be an "S" shaped one that took advantage of his tidal drift. The tide changed three times while he was swimming.

Only a real-time system constantly updated by someone with the swimmer would be able to take wind and waves into consideration accurately, he said. Someone using such a real-time system could probably do quite well, he said.

Miles Saved

Chaffee credited the computer study with saving him five or six miles of swimming. He could have saved 10 miles if he had been able to stay on course, he said. He estimated that he actually swam about 23 or 24

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Stocks Close Up As Market Gains

Computerworld's Composite Stock Index closed Aug. 16 at 139, up 4 points, or 3%, as the stock market continued to advance out of its recent lull.

Five leading market indicators also closed higher: the Dow-Jones industrial average closed at 885.89, up 16.24 (1.9%); the New York Stock Exchange composite average, 55.35, up 0.89 (1.6%); the American Stock Exchange price index, $28.64, up 68 cents (2.4%); the Standard & Poor's industrial average, 107.38, up 1.87 (1.8%); and the N.Q.B.

(Continued on Page 15)

House Group Alarmed By Data Bank Threat

WASHINGTON, D.C. – The computer community was specifically charged with the requirement to "guarantee Americans that the tonic of high speed information handling does not contain a toxic which will kill privacy," in a report approved this month by the full House Committee on Government Operations. The report stated that the views and recommendations of the committee, while specifically focused on the National Data Bank, were also applicable to the structure of any data system which permits unified or central retrieval of diverse information in a form that could relate such data to individuals. This definition, which spparently applies to any of the major information services, such as credit reporting, now are proliferating across the country, suggests the possibility of federal control over many applications of data processing systems.

Independent Commission Sought

The report, which was approved by the majority of members of both parties, commended the Bureau of the Budget for emphasizing individual privacy in the National Data Bank, but said that currently the theoretical or practical procedures did not contain well-thought-out privacy assurances, and recommended that no new work be done to establish the data bank until privacy protection was guaranteed. It also called for an independent "supervisory commission to regulate the operations of the data center and its use by the agencies of the government...". The commission should be composed of nongovernmental as well as governmental experts and should include representatives of the social sciences and civil liberties areas, as well as the technical area. The committee recommended that Congress as well as government agencies should have access to the data bank.

The committee noted the fact that there had been a great deal of criticism of the concept of data banks and said that implicit in all such criticism is a deep fear which has been expressed by Dr. Norman A. Hilmar of the U.S. Public Health Service, in the Feb. 1968 issue of the *American Journal of Public*

(Continued on Back Page)

ACM Conference To Open Aug. 27

LAS VEGAS, Nev. – A new feature of the 1968 ACM National Conference and Exposition here Aug. 27-29 will be the presentation of selected papers from the IFIP Congress held in Scotland earlier this month.

The special session will be chaired by Francois Genuys of IBM, France, program committee chairman for the IFIP Congress. The papers will be "Datalogy, the Science of Data and Data Processes, and Its Place in Education" by Peter Naur, A/S Regnecentralan, Copenhagen, Denmark; "A Micro-Programmed Communication Control Unit" by Sigenori Matsushita, Toshiba Ohme Works, Tokyo, Japan; and "Operating System Structures" by Peter

(Continued on Back Page)

Inscriber Is Computer Based

HADDENFIELD, N.J. – A new type of keypunch replacement was announced last week by Logic Corp. The LC-720 Data Entry System is built around a Varian 620/i computer and produces disk, card, or tape files from up to 120 terminals. The cost per terminal varies from $10,000 for a 10 terminal system down to $3000 for a 50 terminal system.

This is believed to be the first time a computer has been used directly in a keypunching replacement system. It promises to have some effect on the way such systems will be used in the future. The verifying system, for example, could be altered by programming the Varian computer in different ways. With a general purpose computer on the premises, the programmer will probably be able to add very considerably to the strength of the system by modifying the programs. For instance, in some cases totals could be used to verify input, eliminating the need for complete reentry of the data.

LC-720 computer with an LC-727 data entry terminal.

The system consists of one or two magnetic tape units, or a disk drive, and the terminals. There are two types of terminals, an operator's terminal which is provided with a typewriter keyboard and a display. There is also a supervisor's keyboard which is a teletypewriter with additional electronics so that it can be used in connection with any of the other terminals.

Supervisor, Operator Interact

The equivalent of the keypunch program card is called from computer memory or entered by paper tape reader on the supervisor's keyboard. The keying operator can see that the correct program is present because its number is displayed on her own terminal. She then keya data into the system, which normally places it record by record either on the disk or on the tape. If desired, the record can be kept held in memory for verification from another terminal, allowing the overlapping of verification and keying.

Tape or Disk Systems

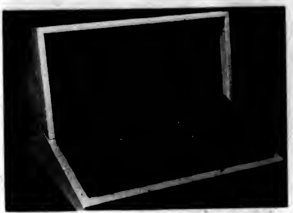
If only a single tape unit is available, records, together with a terminal identification code, are mixed on the tape. The computer then must search to find appropriate entries. This mixing of records doea not occur if they are first placed on a disk, allowing the system to produce separate tapes for each file, together with appropriate headers for the computer which will later process the records.

The characteristics of the system are examined on page 2. First delivery of the system is scheduled for this November.

System Allows Keying Data Onto Disk

The LC-720 Data Entry System by Logic Corp. introduces a new concept in keypunch replacement (see story on page 1). Perhaps the most noticeable feature is the ability to enter data on disks as well as tape. But the flexible system also makes it possible to prepare one tape from several keyboards, to prepare several tapes from one keyboard, and to perform simultaneous verification of input.

Below is a technical description of the system.

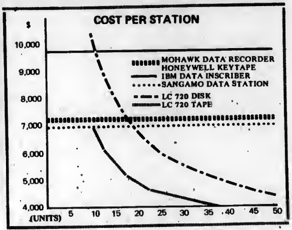


The display on the LC-727 keyboard shows, left, the last record position filled; center, the last character entered; and, right, the mode in which the terminal is operating.

Keyboard

The keyboard of the LC-720 is a normal typewriter keyboard with a display on top (see picture). The display shows the operator, in English, the last character which has been entered. The character's position in the record appears on the left. The right hand panel is used to define the mode in which the system is currently operating, the modes being set either by the program or, alternatively, by the operator. In some cases, such as when the operator wants to confirm that the program for the particular job she is about to start has been allocated to her particular terminal, the display on the right is used in conjunction with the numeric one on the left.

Verification can be handled in the normal way, by an operator reentering the data at a later time, or it can be handled immediately, with the data being input almost simultaneously from two terminals. In this mode the record is not placed on disk or on tape until both operators have agreed on its contents. Logic Corp. points out that while this is not always the best way of doing things, it can be particularly useful where deadlines have to be met.



Price per Terminal

The graph shows the key arrangement for the new system. The price per terminal, which can be used as a measure of throughput, starts high, at above $10,000, and comes down to about $3500 at 50 terminals. (The cost per terminal of noncomputer based systems, such as the IBM Model 50, Mohawk, Honeywell, and Facit systems remains constant.) The result is that the economy of the system is directly dependent on the number of terminals installed in a particular application. In a multiple system, where 10 or more terminals are needed, the price advantage begins to appear over noncomputer systems.

The second advantage lies in the use of the disk packs. The packs can be used on the disk drive on your system. They can also be used to provide faster and/or random input, if this is appropriate.

Technical Details

The disk drive used is the Memorex 630, which is IBM 2311 compatible. This drive was announced last November and has been marketed by Memorex and MAI. A few deliveries have been made, but major deliveries are not expected to start until fall.

The tape unit is manufactured by Peripheral Equipment, Chatsworth, Calif., and is one of the first incremental tape units which can be interfaced with ordinary digital computers at 800 bpi. Reels available are 8" or 10-1/2". It uses an optical capstan positioning coder for checking the position of the data base. The central computer is the Varian 620/i with 4K words in the basic configuration. Programs are prepared specifically for each user and loaded before installation.

The Peripheral Equipment incremental tape drive used by the system.

Service

Servicing will be handled by placing a customer engineer on the site for the first 90 days. Later, the firm hopes to supply service within three hours of a breakdown call. Insofar as is possible, doubtful component parts will be replaced and taken back to the laboratory for testing.

Gallagher Regains Party Support

BAYONNE, N.J. – A call for Rep. Cornelius E. Gallagher's resignation by the Hudson County Democratic organization was dropped last week after Gallagher announced he was going to sue *Life* magazine.

A Democratic spokesman said the party felt that the libel suit would be an acceptable first step by Gallagher toward clearing himself of the charges made against him in *Life*.

Gallagher, known in the computer field for his successful fight against a national data bank, was accused by *Life* Aug. 9 of having various dealings with a reputed Mafia leader. Gallagher has denied the charges and has said the "telephone conversations" printed by *Life* were fabricated.

Meanwhile, the Justice Department last week denied that it had any such wiretap recordings and denied giving any such information to *Life*. The magazine had implied that the "conversations" it printed were the result of federal electronic surveillance of the reputed Mafia leader.

TWO COMPUTERS FOR SALE

TYPE	DESCRIPTION & FEATURES	ORIGINAL COST	SELLING PRICE
(1962) 1401	CPU MODEL F26 16K – 1402 CARD READ PUNCH – 1403 PRINTER MODEL 2 – 1405 RAM FILE MODEL 2 WITH 20 MILLION CHARACTERS. 1407 TYPEWRITER CONSOLE – 6 7330 TAPE DRIVES. AVAILABLE FEBRUARY 1, 1969.	$486,000	110,000*
(1964) 1410	1411 CPU MODEL 3 40 K – 1415 TYPEWRITER CONSOLE – 1414 I/O SYNCHRONIZER TAPE INTERMIX DEVICE MODEL 1 – 1414 I/O SYNCHRONIZER FOR PRINTER MODEL 3 – 5 729 IV TAPE DRIVES – 1402 MODEL 2 READER PUNCH – 1403 MODEL 2 PRINTER. AVAILABLE NOVEMBER 1, 1968.	$725,000	190,000*

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082	Reconditioned	1500.00	50.00	40
602	Reconditioned	2000.00	150.00	24
604/521	Reconditioned	3500.00	300.00	36
083	Under M.A.	4500.00	100.00	60
084	Under M.A.	7000.00	230.00	60
517	Reconditioned	500.00	30.00	24
026	With Gang Punching	3800.00	75.00	60
026	With Interpreting	3400.00	70.00	60
024	With Alt. Prog.	700.00	35.00	18
519	With 10 Pos. Mark Sense, Consecutive Numbering & Gang Punching, Offset Stacker	3500.00	130.00	40
046	Under M.A.	4000.00	125.00	48

WANTED

		BUY
077	Collators	900.00
085	Collators	———
083	Sorters	3000.00
084	Sorters	5000.00
407A1	Acct. Machine	4000.00
407A2	Acct. Machine	5000.00
047	Tape to Card	3000.00
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CW Racing Car Wins First Race, Development of Car Progressing

Computerworld's racing car works its way through the pack at the New Thompson Speedway in Connecticut, left, and then, after winning, makes a victory lap with Steve Smith at the wheel, right. The checkered flag is being held by his wife, hidden behind a friend who jumped in for the ride. Smith skidded off the track early in the race Aug. 17 but then fought his way from 13th to third place in the five class regional race, winning in his class. (Bill Barry Photos)

Plan Public Information Center Net

HARTFORD, Conn. – A network of "total information" centers may soon enable persons, for a nominal charge, to get quick, nationwide information on job opportunities, available housing, and colleges.

Operated by Nisarc (National Information Storage and Retrieval Centers), with headquarters in New York City, the pilot center here is scheduled to open its doors shortly after Labor Day.

Nisarc President Joel Tenzer said that the Hartford center is the first of a planned national chain of 114 centers to be operated on a franchise basis. The company expects to have 10 centers in operation by the end of the year, he said. By 1970, the company expects to have linked up most of the nation's major cities coast to coast, he said.

One Stop Center

The charter center is to serve as a one stop total information utility offering solutions to some of the most vital – yet time consuming – decisions most Americans make today: searching for employment, a home, and colleges for the children.

Tenzer said that the center would use an IBM Quiktran system and Kodak microfilm equipment. The computer will not store the information, but will indicate all the microfilm frames which contain the desired information, he said. As additional centers open, each will keep duplicate microfilms.

"While some attempts have been made in the past to perform one or more of these functions, by and large they have been restricted to only one activity, and they have not been completely objective," Tenzer said. "Until now, no single operation has attempted to pull all of these activities together under a single computerized roof and do so on a national scale."

Tentative Rates

While the rates have not been completely established, tentative rates for the first center will be between $1 and $2 per listing for employers and real estate brokers with a minimum monthly fee averaging about $50, he said. The approximately 1000 colleges to be included will initially pay no fees for their listings, he said.

An individual wanting information on housing or jobs will pay about $5 for a complete rundown of all the items fitting his description of what he wants, Tenzer said. In addition, as additional centers are opened, the inquirer can ask for information concerning other cities, he said.

A rundown on colleges will cost the inquirer about $20, he said.

Tenzer said that the company also plans a data bank of resumes. A listing in that section will cost the lister about $5, he said.

The company also is planning to levy some type of small monthly maintenance charge for listed items, but these have not been established.

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Two Dimensional Flow Charts To display program logic, AUTOFLOW rearranges the input source, similar to the way programmers manually prepare flow charts (if they ever get the time). Our competitors display the source program in the same order as the input (one dimensional); that's like looking at a graphic card listing . . . not much value. If you like card lists, AUTOFLOW can inhibit its two-dimensional feature and produce ordinary one-dimensional flow charts. Only AUTOFLOW produces two and one-dimensional output.

Graphic Display AUTOFLOW draws lines up, down, to the left, to the right, and connects lines going to the same point. Look at our competitors' line drawing capability (down only . . . quite monotonous).

Detail and High Level Charts AUTOFLOW automatically produces high level or detail charts from the same COBOL, FORTRAN, PL-1 or Assembly source input. Compare AUTOFLOW features in this area with our competitor's.

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Editorials

Computers to the Rescue (of Computer Rooms!)

Logic Corporation's new LC720 Data Entry System is long overdue. For almost the first time, the normal computer installation can get a special computer system which really helps the department accomplish its own work. The LC720 uses a computer to support the data entry department (we really must get a name to replace "keypunch department" now that it is doing much more than just keypunching). This is good.

In fact, the design of the system shows an intelligent use of the resources available in the computer area. *Computerworld* is very glad to see them being used to bring down the costs of computer input.

Welcome the LC720!

No Peril in Sight, But Keep Your Eyes Open

Last week we said we would investigate as quickly as possible the question of whether computer policies had been affected by the forces of organized crime, and that we hoped we would be able to present our findings promptly. We are pleased to have been able to do so this week. We are even more pleased to be able to say that we ***can find no evidence that any computer policies we know of have been impacted in any way in favor of organized crime.***

This is pleasant conclusion, one which makes it easier to sleep at night.

However, it must be remembered by everyone in the computer community that the dangers to society, as brought out by various people including Sen. Long and Rep. Gallagher, are still with us. It is necessary to keep a continuous watch for them.

Keep your eyes open!

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Research Report

Nonstandard Collating Can Hold Cobol Back

The relationship between various subjects in the computer field is rarely obvious. Compatibility between file systems turns out to depend upon tape labeling rather than on language problems. The problem of $0.00 dunning bills may depend upon whether the number 0 is built into the hardware in one or two ways (and if -0 is or is not thought to be greater than +0!). Indeed, many of the items that actually affect data processing applications seem at first glance to have no real relationship to the subject matter. (If you do not believe this, go and listen to a systems programmer explaining the reasons why he cannot do something that seems simple.)

No one denies the importance of Cobol, our only common business language. Cobol is generally a known quantity to anyone in the field. Collating sequences are not as well known, except to programmers. A collating sequence is simply the list of characters which defines whether character A is greater than or less than character B (see box).

ASCII (American Standard Code for Information Interchange) is considerably less well known than either Cobol or collating sequences. It really doesn't seem to affect much of the work around the installation, although perhaps someone has read about it and has talked about the position of upper and lower case characters. But in day to day work it doesn't seem to be important. You can get along without it. It certainly doesn't seem to have any relationship to Cobol, although it may relate to a collating sequence. But the fact that ASCII does define a collating sequence makes up for one of the big deficiencies in the Cobol language – the fact that Cobol does not define a collating sequence. The moment that this particular deficiency is made up, then it makes the compatibility of Cobol programs much more practical than they have ever been in the past.

Cobol Is File Dependent

Currently a Cobol program is tied to a file which is sequenced whichever way the manufacturer of the original hardware decided. If you compile the same program on a different computer, you will get a program which works, but *not one which has the file organized in the same order*. As a result, you cannot mix the two files.

This was not important in the past, but now with the spread of inter-system communications it is becoming more and more important and is a problem which the adoption of ASCII can solve. If a Cobol program uses the ASCII collating sequence in its file organization, then it is probable that up to 80% of the controllable problems involved in having real machine-independent programming will be taken care of in one fell swoop.

Getting the Cobol program to use the ASCII collating sequence is not easy. It can be done in any of a number of different ways. For instance, the Cobol program files produced by the forthcoming NCR Century Compiler will most certainly be in ASCII sequence – but this is because the hardware has been set up to work that way. It is the only way that the Century series sets any collating sequence up. In other hardware systems you have a choice of using ASCII or some other collating systems, and very clearly a compiler can take advantage of this if the designer so wishes, without difficulty. Probably in many hardware systems you have the capability of producing an ASCII collating sequence even if you have to use a software routine to do the comparisons for the sequencing. It may take a bit of time, but it is practical. There are no such systems operational at the moment that we know of, but an analogy does exist in the files used by the time sharing GE Fortran and Basic systems.

A Computerworld Recommendation

ASCII, then, has a relationship to Cobol and, indeed, to the future value of your programming investments of today. Its value has been recognized in the government by a presidential order to agencies to utilize it wherever possible. Its importance does not appear to have percolated into the commercial area. At any rate, it is still difficult to find users or compiler manufacturers who are allowing the use of ASCII's collating sequence in their compilers. *Computerworld* hopes that this will soon happen because we believe that it is one of the simplest pieces of standardization which can occur quickly and economically and which can very greatly help everyone.

What is a Collating Sequence?

A collating sequence is the list which determines which character comes first when lists are made. In computers we normally use greater/less than comparisons, with the lesser coming first. It is a simple operation for numbers because it is generally understood that two is less than five. It is not bad for letters either, because dictionaries have taught us to start with the letter A and work through to the letter Z, and by analogy with the numbers, this lets us think of A as being less than B and, of course, less than Z. It is not even too complicated to get the relationship between numbers and letters because there are only two ways of doing it. You can either say that all numbers come before letters or, alternatively, come after them. This leads to two possible sequences.

It is not very complex having two different collating sequences. But the real fun comes when you try to put things like commas, exclamation points, and other special symbols into an agreed place. And, as for those nonprinting characters, well, many people feel that the less said about them the better. Historically, where these were placed in the list simply did not matter, and so they were put in no particular order. In fact, they often did not have a genuine place at all! What happened was that after the coding for about 40 basic characters (A-Z, 0-9, . , , , +, -) was decided, there were left some 15 code combinations to be allocated as necessary. The allocation was left to the peripheral manufacturer concerned. If he needed another character, he selected a particular unused code combination, and used that. But, there was no need for the code used by the card reader to agree with that used by the printer – and often they didn't.

Now the legacy of this lack of coordination has become important – and now we have in ASCII a commonly defined collating sequence.

Let's use it!

Letters To The Editor

Financial Fan

To the Editor:

I enjoy your weekly publication; however, I would like to see one improvement.

Combine the financial pages on one sheet – preferably the middle pages – so that this sheet can be removed in whole and filed for reference.

I feel others would like this also.

David R. Fergason
Chief, Data Processing
Michigan State Police
East Lansing, Mich.

Does anyone else favor this change? Ed.

Punched Cards and Eggs

To the Editor:

I recall recently reading an article in *Computerworld* regarding the legality of a keypunched data card; however, since I do not hold back issues, I am at a loss as to the content of the article.

I would appreciate a reprint or other information regarding the data card as a legal document.

Should you not be able to supply this information, perhaps you could direct me to another source.

H.R. Valdez
Business Manager
Cal Tech Computing Center
Pasadena, Calif.

We did not publish anything on this subject, but since the side of a cow and hard boiled eggs have been used as legal documents in the past, there seems nothing wrong with punched cards. Ed.

Has the Mafia Permeated The Computer Community?

A CW Report Part 1:

Have Our Policies Been Influenced?

Articles in Life magazine have connected the names of two of the 540 legislators of our federal government with organized crime. This would not be of direct interest to the computer community except that both men, Sen. Edward V. Long and Rep. Cornelius Gallagher, are leaders in helping to set computer policy. It is inevitable, therefore, that the question must be raised as to whether or not the Mafia has permeated the computer community.

I.

There are two major ways in which computers could be used by organized crime.

1. Computer files could be searched to locate embarrassing data on people for blackmail purposes.
2. The identity of people who might be easy to lead into compromising situations could become known to organized crime.

These prospects are quite disturbing and fairly obvious. Said one law enforcement officer, "If you have an organization that has billions of dollars to spend simply to find easier ways of making money, that organization can develop all sorts of possibilities."

So it is not far fetched to consider whether the probable aims of the Mafia show signs of having been accomplished or encouraged by the legislators presently under attack.

Use of Computers to Track Down Organized Crime

There are possibly only two computers in the country now used solely for tracking down organized crime. One is in Washington, the other in California. Both are kept under stringent security similar to that surrounding CIA operations. They have been in operation now for a comparatively short time and are only just beginning to show results. *The techniques necessary for this type of application have had to be developed especially for these systems because they never before existed.* Until recently, the hardware required was not developed, nor were the forces of law sufficiently convinced of the existence of organized crime to support such functions. Since the much publicized Appalachian meeting, however, the project has found support from law enforcement agencies and the hardware became available, but the development of software has taken time.

Besides these systems, there is also a computer system for ordinary crime, the National Crime Information Center (NCIC). This consists of a nationwide system of terminals with access to a central computer. The terminals are placed only in law enforcement offices and are under stringent security. The security is such that many law enforcement agencies are not permitted to have a terminal even if they want one. The FBI, which runs the system, has laid down certain criteria the requesting agency must meet before a terminal can be installed. This includes an investigation of potential corruption within the requesting police force. *If there is even a suspicion of corruption, the request is turned down.*

However, *the data in the FBI system is not for the direct purpose of law enforcement against organized crime.* It is simply an information center. It includes details of persons wanted for extraditable offenses, of stolen cars which have not been recovered after a certain length of time, of stolen weapons, and of identifiable stolen property. And that is all. Moreover, it is not generally interfaced into local police computer systems. (Two exceptions: California and St. Louis.)

These are the major systems used by law enforcement authorities. The question is, then, have the activities of Sen. Long, and more particularly, Rep. Gallagher, interfered with the development of these systems?

It is clear that there has been 'interference' with the gathering of data for a national data bank. Gallagher has led a continuous fight to prevent the various agencies of the government from bringing together the contents of their files into a national data center. Quite recently he told a meeting on practical politics that he was "more determined than ever to see that civil liberties and privacy are programmed into the Bureau of the Budget's proposed national data bank." It is quite reasonable to think that without his activities the data bank would now be close to operational.

However, did the proposed operational charecteristics of the proposed data bank impinge on the activities of organized crime? If they did, then there is a case that perhaps organized crime is, in fact, involved in computer policy.

The evidence is that failure of the national data bank to become operational *has in no way handicapped the development of the art of computerized law enforcement with regard to organized crime.* It has not stopped the development of the FBI system, nor has it apparently touched the places where work on the secret systems is proceeding. If the delay in the national data bank is serving the purposes of organized crime, the reasons for it cannot be found under the heading of handicapping law enforcement. They must be looked for elsewhere.

II.

The Creation of Useful Files For Use by Organized Crime

What has been the influence of the investigations by the two legislators? Undoubtedly there has been some. For the first time the general public has, thanks to Sen. Long, been able to see inside the credit operations. The systems used by the direct mailing houses also have been exposed. Both Gallagher and Long have brought out the importance and the possible misuse of these systems to such an extent that few people in government or out of it, in the computer community or out of it, remain unaware of the potential problems. At the moment that seems to be the major impact of their work.

So far no actual items, laws, or other safeguards have been suggested by either of the legislators, but this seems to be reasonable because they have little chance at this moment of being able to pass such bills through Congress, even if they could be written. However, each set of hearings they have held, as they proceed year by year, shows a growing sophistication in understanding the problems and in knowing some possible solutions.

Has this helped the cause of organized crime?

It appears unlikely. The weaknesses of the systems have been exposed, but there is little doubt that they already were known by the Mafia. The need fot precaution against improper activities has received intensive scrutiny from the people possessing the files, which *will clearly make it much harder for the abuse to occur*, and even some of the potential victims have received, albeit indirectly, a warning which may well help to safeguard them.

None of these facts will improve the situation of organized crime.

To summarize, the activities of Long and Gallagher have undoubtedly influenced the development of the national data bank and of the security provisions for commercial data banks. However, this paper cannot see where influence has hindered the law enforcement activities of the country or the security of data banks. In short, there is no evidence that computer policies have been adversely affected by organized crime.

In the next issue we shall deal with the second question: Allowing for the fact that there is no current influence, what are the weak areas and how can we protect ourselves against such influence?

Upgrading Disk Files Creates Programming Problems

By Ned Chapin

MENLO PARK, Calif. – Disk pack users who seek to increase computer power by changing to the new disks, face reprogramming problems. These problems are far more serious than those faced by tape users who changed to the higher performance tapes.

The reason for this difference lies partly in the hardware and partly in the software in common use. A contrast of tapes and disk packs clarifies the issues.

Tape Developments

The tapes in common use have gone in recent years from less than 30K cps to more than 200K cps nominal transfer rate. This has come partly from faster tape movement, from about 36 ips to about 150 ips. Partly it has come from higher recording densities, from 200 bpi to 1600 bpi. On top of this, the effective transfer rate has been subject to offsetting changes. Some, like shorter interblock gaps and faster start/stop times, have improved it. Some, like going to 8 bit characters with parity, have tended to reduce it. But the net effect has been upward.

Program Changes Not Essential

None of these changes has required any significant changes in programs, but they have encouraged some. The main area of concern has been to adjust internal program timing to utilize the shorter overlap time. The rest has been gravy to the user.

Disk Picture Is Different

The disk picture is turning out differently. Nominal transfer rates from disk packs have risen from about 75K cps to over 300K cps. This has come partly from faster arm movement. But more importantly, it has come from an increase in the density of recording both in terms of the number of cylinders, from about 100 to about 200, and in terms of the number of characters per track from about 2K to more than 7K.

Programming Changes Involved

These changes do require changes in programs. The first change, still to be taken by some users of "compatibility" and "emulation," is from sector to track handling of data. This eliminates the 100 character sector restriction, and requires reprogramming to take full advantage of it. The second change is from the 100 to the 200 cylinder capacity or the change in the number of tracks from 10 to 20 per cylinder. Changing just the job control cards takes care of part of it, but address constants in programs may have to be modified, and programs recompiled to use new I/O routines. Moreover, the amount of slack time between disk accesses may no longer be sufficient for the processing, so this also can require changes in program logic.

Effective Transfer Improvements

Third is the density change to more than 7K characters per track. This does not require the user to change his programs, but it puts the user under the same pressure to use disk space efficiently in the same manner as the user of magnetic tape. The user can improve the effective transfer rate by reading and writing long blocks, thereby reducing interblock gap time and block header time, such as for count fields and key fields.

Use of New Facilities Means Problems

The buffer capabilities the manufacturers provide in the new models of disk drives add to the user's conversion task if he desires to utilize them. Features such as "file scan," "file protection," less restrictive data format requirements on tracks, and even "record overflow" all work better when the user reprograms to exploit them.

The argument that upward compatibility is being maintained is true. The manufacturers' software, if the user recompiles, will in most cases enable a program to run. But the user does not gain the full benefit of the improvements which his dollar expenditure on hardware might seem to have purchased. The newer disk packs provide the potential for improvement. To exploit that potential fully, the user must do some work.

Help Includes Self-Help

Some possible future developments, such as more than one set of arms, will add to the reprogramming problem. How are the seeks to be scheduled to minimize access time? This simple question does not have a simple answer. Any answer adequate enough to be of real help to a user is going to require programming.

TLW Computerworld Corner

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Item 4:	1410-40K, 1415, 3-1414.s, 4-729's, 1402, 1403. AVAILABLE 60 days.	Food
Item 5:	1401 C4 8K with 1402, 1403 and 3-1311's. AVAILABLE 90 days.	Manufacturing
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French Defense Department Orders Two Univac 1108s

The French Department of Defense, Fort de Montrouge, Paris, has ordered two Univac 1108 multiprocessor computer systems, valued at approximately $7 million. The equipment, to be installed in the department's scientific and computer center, will be used for research and scientific work, and will upgrade a single processor Univac 1108 system currently in use. The systems will include at least two mass storage memory units, seven high speed memory drums, 12 magnetic tape units, and two communications subsystems.

Fiduciary Trust Co., Boston, Mass., has ordered a Burroughs B300 system valued at over $425,000. The leased system will be used primarily for the management of personal trusts. The system will include the central processor, line printer, punch card reader, two magnetic tape units, and a high speed random access disk file. Installation is scheduled for summer.

First National City Bank has installed a Digital PDP-10 system in its New York City headquarters to help solve analytical and research problems. The system is equipped with a 32,768 word memory that is expandable to 262,144 words; a high speed line printer; swapping disk; card reader; and magnetic tape system (DECtape) that is IBM compatible. The users have access to the computer via teletype terminals. Software systems include Fortran IV, a control monitor, a macro assembler, a text editor, a symbolic debugging program, an I/O controller, and a peripheral interchange program.

Orders and Installations

The State University of New York in Albany has installed an RCA Spectra 70/35 computer system to handle general accounting operations. The computer's peripherals include tape and disk drives and will be used for budgetary operation as well as statistical reporting.

Canadian Pacific Oil and Gas Ltd., Calgary, Alberta, has installed a Honeywell Model 1200 to be used to plot contour maps and cross section maps for geologists, and to maintain records of existing wells and oil production for each well.

Seven RCA Spectra 70/45 computer systems, valued at $9.2 million, have been purchased by the Travelers Insurance Co., Hartford, Conn. Three of the third generation computers were on lease and converted to outright purchase. The remainder will be installed over the next several months. Applications involve life, health, casualty, and group insurance programs.

SIA (Societe d'Informatique Appliquee), London, England, has ordered a Control Data 6600 computer system for its Informatics Center. The system will be used for consulting services in Europe and the U.S. Installation is scheduled for August.

Two banks have ordered NCR Century 100 systems: The Creve Coeur Bank and Trust Co., Creve Coeur, Mo., and the North Side Bank, Jennings, Mo. Both banks plan to establish central information file systems. Delivery is scheduled for spring 1969.

Watkins Products, Inc., Winona, Minn., has installed a Honeywell Model 120 computer system to control its inventory. The new system replaces a Model 1401. A Honeywell Liberator technique was used to convert 244 programs from the old system.

Information Systems Group Is Established

PALO ALTO, Calif. – Varian Associates has established an Information Systems Group to initially include Varian Data Machines, the company's computer operation in Irvine which it bought last year as Decision Control, Inc.

Plans call for expansion of the group through internal development, acquisition in related areas, and support of the rapid growth of the existing computer operations in Irvine, Varian said.

The firm markets the Data 620/i and 520/i general purpose computers, as well as a line of computer logics and memories.

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7070/74, 7080, 7094 FOR SALE

IPS has for sale and delivery in the near future several attractively-priced IBM 7000 series systems. Available for immediate delivery is a very reasonably-priced 7070 10K without tapes. A 7074 10K with 7 729 VI (90KC) tape drives can be delivered Nov. 1st. Also for immediate delivery is a 7080 160K system without tapes. For an installation requiring a powerful scientific system, a 7094-I with 14 729 VI's & V's is available Jan. 1, 1969. The 7094 also has a 1401 4K I/O system, as an option. For prices and details, please call or write.

IPS
INFORMATION PROCESSING SYSTEMS, INC.
200 WEST 57TH STREET NEW YORK N Y 10019 (212) CIRCLE 8-3287

MIT Extends R&D Contract With Adams

WATERTOWN, Mass. – The MIT Lincoln Laboratory has approved a one year, $250,000 extension to its contract with Adams Associates to continue the development of the time shared, real-time graphics system for the TX-2 computer. Adams will continue its assistance in the development of machine oriented languages; advanced graphics applications, including circuit mask design and an interactive formating and editing system to operate on radar data; and improved time sharing systems.

CONTRACTS

Nuclear Reactor Noise Data

LOS ANGELES – The Atomic Power Divisions of Westinghouse Electric Corp., Pittsburgh, Pa., have leased a Mac/Ran system package of digital computer programs from Measurement Analysis Corp. The system has been installed at Westinghouse Atomic Power Divisions, Penn Center Site, Monroeville, Pa., for use on a CDC-6600 computer. Its application is the general reduction of nuclear reactor noise data, input/output relations through a nuclear reactor, and related areas of nuclear reactor development. Fortran IV has been included in the package.

Mail Feeder

DALLAS, Texas – Two development contracts, valued at approximately $400,000, have been awarded by the Post Office Department, Washington, D.C., to Recognition Equipment Inc. One contract calls for the design and construction of a prototype modal of a high speed mail feeder to interface with other post office mail sorting devices. The other contract is a systems study of reading techniques using OCR technology to read addresses and sort mail.

Bank Credit Card

NEW YORK – Under signed agreement with Uni-Serv Corp., Programming Sciences Inc. will provide the management information systems for Uni-Serv's new bank credit card plan and will participate in the licensing of the plan to banks on a nationwide basis. The revolving credit plan will allow customers to use their bank credit cards beyond the marketing area of the participating banks. The system is operated through an IBM 360 computer.

Air Defense System

SAN DIEGO, Calif. – A follow-on $65,000 contract has been awarded by Hughes Aircraft Co. to Cubic Corp. for computer peripheral equipment. Cubic has been supplying this equipment for the Hughes 3118 and 3324 computers. Under terms of the agreement, Cubic will deliver line printers, tape decks, and power supply units, in addition to providing engineering systems management services.

FCC Minority Cites Voting, Says Carter Delay 'Unfair'

The Federal Communications Commission's decision to temporarily stay its June 26 ruling against the foreign attachments tariff [CW, Aug. 7] was reached only after some bitter infighting within the commission. Excerpts from the dissenting opinion of Commissioners Kenneth A. Cox and Nicholas Johnson are printed below as a matter of public interest. (The subheads have been added by Computerworld.*)*

On June 26 of this year a unanimous FCC found that the "foreign attachment" tariffs of the Bell System "are, and have since their inception been, unreasonable, unlawful and unreasonably discriminatory under . . . the Communications Act."

This brought to an end – so we thought at the time – an 11 year struggle between Thomas Carter and the American Telephone and Telegraph Co.

FCC Hearing Examiner Naumowicz was impressed, as well he might have been, with the problems faced by the little Carter company from the beginning of its encounter with the gargantuan AT&T. He said:

". . . The examiner is struck . . . with the inherent unfairness of a system which permits the telephone company to bar the use of equipment or services which compete with their own until the producers thereof have undertaken the long and costly task of adjudication by regulatory authority."

From 1957 until the FCC's decision in this case the telephone company has argued that their tariffs prohibit the use of the Carterfone. It was backed up in this interpretation by the FCC, first in informal rulings and then in a letter of April 23, 1965 advising that the tariffs "prohibit the interconnection . . . ." Finally, in desperation, Carter brought a private antitrust action against AT&T and the General Telephone Co. The Federal District Court held that, under the doctrine of "primary jurisdiction," the FCC must first pass upon the validity of the tariffs. The Court of Appeals affirmed. With a determination and commitment of resources that has been extraordinary, Thomas Carter came back to the FCC in 1966. He has, since that time, pursued this matter as it has passed its way through several stages of proceeding, culminating in our recent decision of June 26.

Given the telephone company's unbending position in this case from its inception, we suppose we should not be surprised that AT&T has now asked for a "stay" of our decision. It seemingly seeks to withhold from Mr. Carter for the longest possible period the fruits of his expensive victory – perhaps as a lesson to others who may be considering the costs of challenging AT&T's interpretation of this or some other tariff provision.

Stay Denied at First

When the commission first considered this matter at its regularly scheduled meeting on Wednesday, July 24, 1968, the staff was instructed (by the three man majority of the five commissioners present) to prepare an order denying the requested stay. That proposed order was prepared and circulated. It concluded:

"Having examined carefully and in detail the requests for stay, we conclude that the requests should be denied. Before the commission would be justified in granting a stay, the probability of irreparable harm must be shown with reasonable certainty, and petitioners have failed to meet this burden. In this connection we note that there seems to be adequate means for the telephone companies to protect themselves against the connection of harmful devices to the telephone system."

The last sentence is a reference to the position of the commission's own Common Carrier Bureau, a party in this case, which filed a position in the proceeding stating:

"We submit that if the commission should decide not to stay the effectiveness of its decision, the above quoted provisions of the tariff, properly enforced, would, in our opinion, protect the telephone companies and the public from any significant harm that could occur during the period that the commission may require for consideration of the forthcoming petitions for reconsideration."

Vote Reversed

The final vote is now four to two *against* the original order, and in favor of a new one which was circulated at the same time. The concluding paragraph of the commission's adopted order reads:

"We therefore believe special care is warranted to insure that full consideration is given to the arguments which may be presented by the petitions for reconsideration before permitting our decision and order to go into effect. On balance, therefore, we believe the public interest will best be served by maintaining the *status quo* by exercising our discretion to stay the effect of our decision and order pending disposition of petitions for reconsideration."

Where now is the finding of "irreparable harm"?

It has also been brought to the commission's attention that it would be possible to grant the stay only with regard to the Carterfone opinion's application to *other* devices (which AT&T claims to fear most), leaving it in effect for Carter Electronics. This would at least permit the long harassed Thomas Carter to proceed immediately with his antitrust suit in the District Court. This alternative has been rejected by the majority, too – for reasons undisclosed.

Relief Within Reach

When this case was decided it was hailed as a great policy breakthrough which would open up our national telephone network for the attachment of new devices and freer interconnection of private communications systems. In addition, it held out the possibility of relief for the developer of the Carterfone, who had pressed the matter to decision. Now, however, this result is to be delayed at the request of the telephone industry.

A petition for stay is normally granted only when a petitioner has shown that he will otherwise suffer irreparable injury and, usually, that he has a reasonable chance to prevail in the further proceedings for which time is requested. Petitioners have not met either test here – and the majority doesn't even claim that they have.

Indeed, the majority simply jumps to its conclusion in a paragraph of ten lines in which they speak of "special care" to insure full consideration for the arguments petitioners haven't yet made with respect to a carefully reasoned decision which the commission adopted a month ago without dissent. They express the belief that "on balance . . . the public interest will best be served by maintaining the *status quo*" pending receipt and disposition of the petitions for reconsideration. However, we are not told what contentions were "balanced" to reach this conclusion – unless the very brief summary of the pleadings is intended as a catalogue of the matters on which the majority rely to reach their result. If so, it seems to us that the contentions of the Common Carrier Bureau, Carter, the National Retail Merchants Association, and the American Petroleum Institute clearly meet and outweigh the arguments of petitioners. At least the Tennessee Public Service Commission (an intervening party to the case), which also urges the stay, had the candor to say that the decision, "disturbs long standing rate making patterns, which have been found to be in the public interest and would result in a loss of revenue to the telephone company."

No Exemption

And the majority completely overlook Carter's contention that, at the very least, if a stay is granted it should not extend to the issues relating to the Carterfone device itself or the issues referred to the commission by the United States District Court. Since the only arguments of the petitioners recited by the majority are very general in character and do not go to the specific relief granted Carter, we believe it is unfair to delay further the remedy the latter has been seeking so long.

We believe this case was carefully and properly decided and that the long continued practices which the commission found contrary to the public interest should be terminated as quickly as possible. Petitioners can then pursue their requests for reconsideration – and possible judicial review – without prolonging practices the commission has found to be inimical to public and private interests. But the majority – on pleadings which do not meet sound procedural standards – permit their continuance. We note the reference to expedited consideration and hope this goal can be achieved, but we know that the odds favor considerable slippage in any schedule that may be set – and see no reason to defer what we regard as the very beneficial results of the decision regarding this 11-year old tariff while petitioners run out all the procedures available to them.

Remote Plotting Possible With New Control Unit

A remote plotter controller, the Model 211, for use with IBM 2741 or 1050 terminals and with RAX, CPS, and other IBM remote access computation systems, permits automatic plotting of computer output transmitted over telephone lines. The unit, with CalComp software, provides an interface with 500 series plotters (12" or 30" drum, or 31" x 34" flatbed). The electronics are mounted in a bottom drawer of the cabinet which matches IBM 2741 cabinetry in appearance. A telephone may be installed in the upper drawer. California Computer Products Inc., 305 N. Muller St., Anaheim, Calif. 92803.

CalComp 211 remote plotter controller, shown underneath a CalComp 565 plotter,

New Products

Plotter Terminal

A new digital plotter, priced under $4500, has been announced for time share users. The Model PT-1, complete with interface, is compatible with any teletype terminal and its Data Set or telephone coupler. The unit plots data while the data is printed on the user's time sharing teletype terminal. The x and y data to be plotted is scaled to provide the desired plot size, and is then printed in columnar format. Plotting can be done in any time sharing language which has a columnar format capability. When used with an ASR Teletype, the Teletype can be used to capture plot control printout data on paper tape, so that plots can be duplicated off-line. Data Interface Corp., 18455 Burbank Blvd., Tarzana, Calif. 91356.

Ready for Export

A LAB-8 computer for signal averaging is given a final check at the Digital Equipment Corp. plant in Maynard, Mass., before being shipped to the University of Copenhagen, Denmark, for use in the school's Institute of Neurophysiology. It was the first of the new $16,900 systems to be delivered.

New Honeywell EDP Plant Will Employ About 600

WELLESLEY, Mass. – Honeywell Inc. will begin construction of a multimillion dollar computer manufacturing complex in Billerica this fall. Completion is planned for August 1969. The complex will include a 150,000 sq. ft. plant, an office building, a cafeteria, and a 600 car parking lot. C.W. Spangle, vice president and general manager of Honeywell's EDP Division, said about 600 persons will be employed at the plant. The location is a 65 acre site along Route 3, near Concord Road, midway between Route 128 and Interstate 495. The plant will be used to manufacture, assemble, and test computer peripheral equipment, printed circuit boards, and backboards for computer systems.

Expansions

Com-Share Southern Expands Operations

HOUSTON – Com-Share Southern, Inc. is initiating a major expansion of its operations by opening offices in California, Colorado, Oklahoma, and Louisiana, and by adding a third installation in Texas. Announcement of the move was made by the company's president, William D. Mercer. Each location will offer time shared computer services.

UDP Opens Seattle Office

PORTLAND, Ore. – United Data Processing will open its first branch office in Seattle, Wash. Company President James O. Powell has named William A. Brealey as director of marketing and branch manager of the new office. An IBM 360/30 computer and tape-disk system will be installed upon completion of remodeling of the 13,000 sq. ft. of offices at 2620 Second Ave. The Seattle branch will provide back up services for existing computer installations.

Stromberg Datagraphics Opens Branch Office

SAN DIEGO, Calif. – Stromberg Datagraphics, Inc., a subsidiary of General Dynamics, has opened a branch sales office at 850 Providence Highway, Dedham, Mass. Louis J. Williams has been appointed branch manager. Current plans call for the addition of four salesmen and two systems analysts by the end of the year. The new office will serve the New England area.

Communitype Relocates

STIRLING, N.J. – Communitype Corp. has relocated its manufacturing, research, and development activities from Summit to a 15,000 sq. ft. facility in Stirling, a community near Plainfield and about 25 miles southwest of Newark.

Programming Sciences Opens Hartford Office

NEW YORK – Programming Sciences Corp. has opened a new office at 999 Asylum Ave., Hartford, Conn., to service advanced EDP users in Connecticut. The new office is under the management of Barry McAdam.

The operation will service the insurance and aircraft industries and other sophisticated users in the greater Connecticut area.

One Eyed, One Armed Robot Built

STANFORD, Calif. – A one eyed, one armed robot is under development here. It may be a far cry from the fancy robots of science-fiction, but you have to start somewhere.

The project is being conducted by the Stanford University Computer Science Department as one of several artificial intelligence projects aimed at finding out how intelligent a computer can be. The research is concerned with making computers perform simple tasks that would require intelligence if performed by people.

The computer hand-eye system is a forerunner of automated assembly in industrial processes – systems that use eyes and hands to do simple jobs such as soldering connections, assembling connectors, and other relatively unskilled tasks now done by human beings.

Eventually, it could lead to unmanned interplanetary exploration systems, particularly important for space probes to planets as close as Mars because continuous supervision from earth is not feasible over long distances.

Existing Systems Very Simple

Existing hand-eye systems are capable of only modest tasks, such as looking at, picking up, and stacking randomly scattered blocks, much as a child might.

The computer's eye is an ordinary television camera. When the computer gives the appropriate command, a rectangular area from the camera's field of view is read into the memory of the computer.

(A new $50,000 visual dissector camera that will eventually be hooked up in place of the television camera has recently been delivered. Lester D. Earnest, the executive officer, said that the new eye should improve the computer's vision but at a sacrifice in speed.)

"For example, if the computer reads the full field of view, it will receive 333 x 250 or 83,250 numbers, each of which gives the light intensity in one direction from the camera on a 0-15 scale," Dr. John McCarthy, professor of computer science and the project's principal investigator, said. "The problem is to reduce this huge mass of information into a few meaningful statements about the environment.

As the computer directed hand picks up a cube, the monitor shows the picture that is being transmitted to the computer by the TV camera.

Detecting a Cube

One of the first programs to be written for use with the camera locates cube shaped blocks.

"It accomplishes this by starting at the bottom of the picture and examining each horizontal line a point at a time until it finds a light spot," McCarthy said. "Then it looks in a little circle around this point until it finds a dark-to-light transition which is presumably a point on the edge of a cube.

"Taking this point as a center, it strikes another circle and finds another dark-to-light transition," he said. "Continuing this process, it traces around the outline of the cube until it comes back to its starting point."

All this gives the computer about 100 points along the edges of the cube. Its next step is to fit these points into straight lines and compute the intersections of these lines which correspond to the visible corners of the cube.

"Unless the cube is lined up with the line of sight from the camera, there will be six edges and six vertices," McCarthy said.

The calculated lines and vertices are displayed on a cathode ray tube so that the programmer can see what the computer thinks it sees.

Picking It Up

With a description completed, the program can then direct a mechanical hand and arm to pick up the cube and stack it on top of another.

"The arm is about the same size as a human arm and has six joints operated by electric motors that can be turned on and off by the computer," McCarthy said. "A seventh motor opens and closes a vise like hand."

The program computes the sequence of operations required and turns the motors on and off to accomplish the stacking. Kinesthetic sensors (potentiometers) tell the computer when each joint is at its proper angle.

"If there are errors in the proper placement of the blocks, the program makes adjustments and nudges the cubes so that one is squarely on top of the other," McCarthy said.

The eye then locates another block, and the process is repeated.

Robot Carpenters?

"All this is just a first step toward a long range goal of being able to make computers do useful work that involves seeing the outside world and manipulating it," McCarthy said. "It is through this process that we envisage computers performing such tasks as driving cars and automatically constructing houses."

An automated laboratory – with eyes, hand-like manipulators, and the ability to make many decisions on its own – would be highly effective in gathering data when landed on a planet.

Present exploratory devices are simply collections of isolated experiments controlled from earth. Continuous supervision is not feasible over long distances, when command signals from earth may take as long as 30 minutes on a round trip to Mars.

Computer Lets GPO Print Faster, Better

WASHINGTON, D.C. – With the aid of a computer, the world's largest publisher is also one of the fastest.

The U.S. Government Printing Office (GPO) is using the computer and a photocomposer in tandem to produce catalogs, indexes, and other large documents at a rate of up to 2,500 pages a day. Through better typography, the system has made these volumes more readable. At the same time, it has generated nearly a 50% saving in page space compared with the use of high speed printer copy, substantially reducing production costs in the process.

In producing the 1968 Defense Supply Agency's mammoth cross reference index, GPO avoided a sizable portion of standard production costs by condensing what would have been a 156 volume set into 81 volumes.

Since its installation in late 1967, the system has taken over much of the voluminous statistical and tabular kinds of text formerly set on computer printers.

It is being used to prepare documents such as a U.S. Navy thesaurus, Department of Commerce research reports and abstracts, Department of Labor statistical reports, Department of Defense supply catalogs, Post Office National Zip Code Directory, and several other indexes and directories.

Growing Workload

"Given our rapidly growing workload, electronic photocomposition is the only feasible way to handle many jobs which are large, repetitive, and require better quality typography than that available through computer printout," said James L. Harrison, head of the GPO.

GPO uses an IBM 360/50 with a 250,000 character memory to control the typesetting process. Magnetic tapes with data prepared by other agency computers are read into the system, reformatted, and written on magnetic tape, ready to be typeset by GPO's Linotron, an electronic photocomposition device, at speeds up to 1000 cps.

Operating under control of a Master Typography Program contained in 190,000 core positions, the computer gives the Linotron the material to be printed with directions as to type style, type size, column number and width, line justification, upper and lower case, hyphenation, character position on the page, and other details of typography and page makeup.

As workloads increase, GPO plans to use the computer to control two Linotrons, producing possibly as much as 20% of GPO's total typeset output.

The computer is also being used for a wide range of administrative jobs such as payroll preparation, inventory management, and work-in-process control.

The computer room at the Government Printing Office helps the agency keep up with the government's growing publishing demands.

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'But Your Honor, the Computer Said...'

LOS ANGELES – The day may not be far off when lawyers will be able to use computers to help them present their cases to a court and to predict how an appellate judge will probably decide a lawsuit, based on research underway at the University of Southern California Law Center.

Reed C. Lawlor, a Los Angeles patent attorney, physicist, and computer scientist, has worked for almost 10 years in an effort to describe some phases of the judicial decision making process by means of mathematical formulas. Lawlor's research has been supported under grants by the National Science Foundation since 1964.

The principal research has been conducted by law students working under Lawlor's guidance here and at the University of California at Los Angeles. Some phases of Lawlor's methods are being tested at other universities and in the law department of a private corporation.

Checking Judge's Record

When a computer is given all the facts pro and con in a case, together with information from similar prior cases and the judge's history of decision making on those prior cases, the probable outcome of an appeal can be forecast, Lawlor said.

Computers will never replace judges in handing down decisions, Lawlor said, any more than computers will replace physicians in diagnosing disease, but they can help lawyers forecast results based upon current and prior information.

"When lawyers become more familiar with the use of computers, they will be able to use computer techniques to help in presenting their cases," he said. "The day will come when a lawyer can test his arguments by means of a computer to determine which are more likely to produce the results sought. Sometimes he will discover that no reasonable presentation will produce a favorable result. Armed with the results of such studies, the attorney will be in a better position to advise the client whether to proceed with the litigation and, if so, how."

A research associate in law at USC, Lawlor proceeds on the theory that the classical principle of precedent (known as *stare decisis* – let the decision stand) must be replaced by a new principle of precedent if we wish to understand what individual judges do and predict what they are likely to do. This principle, which Lawlor calls "personal *stare decisis*", is a personal thing with judges. Each judge, according to Lawlor, possesses his own personal equation which can sometimes be approximated by a computer analysis of the fact patterns of cases and the judge's decision on the cases.

Decisions Vary

"There are those who believe that the decision of a judge should be something absolute, something that is the same regardless of who the judge may be," Lawlor said. "However desirable this concept may be as an ultimate goal, the facts of judicial life make it clear that decisions do vary from one judge to another. They also vary over time.

"The principle of 'personal *stare decisis*' helps explain inconsistency between judges, even those who serve on the same court, and changes in the decision patterns of courts with the times. Decision patterns change with the times because the judges themselves change with the times and because new judges with new ideas are continually being appointed to the bench."

This research has been directed to a study of the behavior patterns of judges of appellate courts only. This is the most fruitful area for initial studies of this type because there the disagreements between judges who are on a par become obvious from dissenting opinions. These disagreements help determine differences in the personal equations of the judges.

Lawlor believes that each judge is consistent in his legal decisions and that his opinions and those of his colleagues reveal the facts upon which decisions are based.

He reduces patterns of facts to mathematical formulas which apply to similar new patterns of the same or similar facts in different cases. He proceeds on the assumption that every fact is favorable to either a positive or negative answer to the issue posed in a case. He words the fact descriptors to favor one side, and then determines which facts represented by those descriptors are present in a case and which are absent. Each fact is represented by a 1 and each fact absent by a 0. A string of 1s and 0s represents the fact pattern of a case. Thus, each case is represented by a long binary number which can be understood and analyzed by a computer. By manipulating such binary numbers and also numbers representing the votes of judges, Lawlor seeks to find how the votes are related to the patterns of facts. The computer calculates a weight for each fact. But this weight varies from one judge to another.

"Weighing" the Cases

"Assuming that the weight of the case equals the sum of the weights of the facts, the weights of the cases can all be reduced to a common scale, thus normalizing the attitudes of the judges.

"When this is done, the weight for any given case varies from one judge to another."

In each of two different fields of law, tests have shown that the frequency distribution of weights for many different middle-of-the-road judges fit a common smooth curve.

"By the use of personal equations of judges, the weight that each case has for that judge can be calculated from his weight for the fact. From the weight that the case has for each judge sitting on the same court, one can determina where that judge's attitude lies on the common smooth curve. From this information one can then calculate the probability of a favorable decision by each of the respective judges. Also, one can calculate the probability that the majority of the court will make that decision."

Operators in the control room at the Kidd Creek Mine are assisted by a computer system that monitors reports from x-ray spectrometers, makes processing adjustments, and signals for operator help when limits are exceeded.

Computer System Helps Process Ore

TIMMINS, Ont. – The first computer system for simultaneous handling of data from two independent x-ray spectrometers is providing continuous or nearly instantaneous reports on conditions along three separate processing streams at Texas Gulf Sulphur's Kidd Creek Mine near here.

A digital computer receives and interprets real-time information gathered by on-line x-ray analyzers. The system advises control room operators of the relative amount of each of five elements at five points in each of the three process streams. The system can provide a quantitative analysis of the five elements at a given point in the process within 60 seconds, 120 times faster than a chemical laboratory assay.

The system prevents the loss of valuable minerals which must be accepted with slower detection of process yield trends. With current assay information available, the mill operator can make timely process (flotation reagent) adjustments to correct any deviation from desired results.

The computer also totals tonnage figures from eight weightometers and prints eight hour shift reports and a daily three shift report.

Diagnostic System

In the plant, the operator has a complete diagnostic system which monitors and alarms failures in the x-ray equipment and reports excessive heat in 48 grinding mill bearing points. In addition, recalibration needs that are outside established limits are typed on the log sheet so the operator can make local adjustments. Within limits, the computer system provides automatic on-line recalibration.

The Honeywell system consists of the digital computer, operator's console, input/output unit, and four Teletype units – one corresponding to each of three flotation processes operating at the plant plus a spare:

Sampling Operation

In operation, the x-ray analyzer emits gamma rays into the sample in the process stream for one minute. Secondary radiation from the sample is converted to an electrical charge and stored on capacitors in the analyzer. When the sampling is complete, the computer uses the stored voltages to determine the relative amount of each element in the process stream. All 15 process streams are similarly sampled and the computer types out the per cent composition on one of the Teletype units.

Six recalibration briquettes – three for each x-ray – may also be checked by the analyzers to bring the system automatically into proper adjustment. Out-of-limits recalibration values are typed out in red to inform the operator that local adjustments are required. The computer system accepts 24 digital and 64 analog process inputs and provides 36 digital process outputs.

Data Bank Set Up For Flood 'Victims'

CLOVERDALE, British Columbia – The District of Surrey, a sprawling, 132 square mile suburb of Vancouver, has put its computer system to work preparing for the next time the Fraser River overflows its banks.

One of the frontier challenges of living in Canada's far west bedroom community is the Fraser River which loops along the district's northern border and normally empties into the Pacific Ocean. During the yearly spring flood, the snow swollen river also empties over much of the District of Surrey.

The district's Honeywell Model 120 computer system has completed a classification of the community's 83,500 residents, most of whom live along the river, to speed their rescue during the floods and to soften the hardship they experience in being driven from their homes.

Who Needs What?

The computer knows, for example, which residents have their own flood transportation so that rescue efforts won't be wasted trying to reach families already evacuated. The computer also lists persons who have volunteered to house flood victims and classifies them according to such things as job, income, and religion. That way district officials hope persons driven from the homes will find temporary quarters in the homes of persons with similar religious beliefs, jobs, and incomes.

Harvard, MIT to Share Computer System, Transfer Information

CAMBRIDGE, Mass. – A non-profit organization, the University Information Technology Corp., has been set up jointly by the Massachusetts Institute of Technology and Harvard University to implement a computer sharing system and a system for transferring information between libraries.

Among the activities planned by the new organization are:

- Sharing of computer facilities through data links and shared use of selected data files and computer programs.
- Collaboration in research on information transfer between the Harvard and MIT library systems.
- Research and experiments in teaching through the use of computers.

The new corporation will draw on work which already has been done. For example, in 1965 Harvard installed a network of coaxial cables to provide multi-channel distribution of computer information, television signals, and other electronic data. This system provides a communications link between lecture and concert halls, classrooms, laboratories, and other research centers at Harvard, the Harvard Business School, and the studios of the WGBH Educational Foundation in Boston.

Carl F.J. Overhage, director of MIT's Project Intrex, a program of experiments on the use of new information technology in libraries, is executive director of the new corporation.

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LOS ANGELES – Since persons attending the ACM Conference in Las Vegas, Nev., Aug. 26-29 will be there nights as well as days, the Digitek Corp. has come forward with its own simplified approach to winning at blackjack.

"There are," the company says, "several things to remember and several rules.

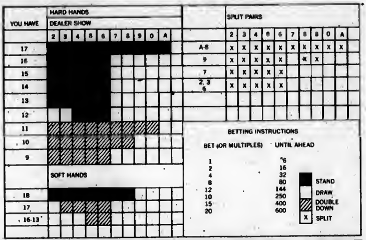
"You must understand two words which are beyond the ken of the scientist and the rest of the mortal world. They are Hot and Cold.

"1. When you are winning (Hot), continue increasing your bets according to the table at right.

"2. When you are losing (Cold), go to bed or drink, or both.

"3. Cut out the table, fold on the centerline, and place in your wallet. Follow this table religiously on each and every play.

"4. Do not get a hotel room. After all, you're only going to be in Las Vegas for four days."



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10	▨	▨	▨	▨	▨	▨	▨	□	□	□	
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	SPLIT PAIRS										
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A-8	X	X	X	X	X	X	X	X	X	X	
9	X	X	X	X	X		X	X			
7	X	X	X	X	X						
2, 3, 6	X	X	X	X	X						

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BET (OR MULTIPLES)	UNTIL AHEAD
1	6
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4	32
8	80
12	144
10	250
15	400
20	600

■ STAND
□ DRAW
▨ DOUBLE DOWN
X SPLIT

Computers And Privacy Session Set

BOSTON – An evening session on "Computers and Privacy" will be part of the IEEE Northeast Electronics Research and Engineering Meeting here Nov. 6-8.

Dr. K.C. Black will chair the session, which will include papers by Prof. Robert M. Fano of MIT, Prof. Manley Irwin of the University of New Hampshire, Prof. Alan F. Westin of Columbia University's Center for Research and Education in American Liberties, and Paul W. Knaplund, vice president of IBM. The session will start at 8 p.m. Wednesday, Nov. 6, in the Independence Ballroom of the Sheraton Boston Hotel.

Computer Sessions

Among the other sessions of interest to computer users will be "Computerized Testing for Electronic Manufacturing," at 10 a.m. Nov. 6; "Computer Aided Large Scale Systems Design," at 2:30 p.m. Nov. 6; and "How to Apply Computers for Engineering Solutions," at 2:30 p.m. Nov. 7.

The meeting will be divided between the Sheraton Hotel and the War Memorial Auditorium. Further information may be obtained from Val Laughner Associates, Inc., 581 Boylston St., Boston, Mass. 02116.

calendar

Sept. 9-11, Washington, D.C. – Electronics & Aerospace Systems Convention (EASCON). Contact: Mrs. Harriet H. Manley, Page Communications Engineers, Inc., 3300 Whitehaven St., N.W., Washington, D.C.

Sept. 25-27, Chicago, Ill. – Proprietary Programs and Software Conference. Contact: H.E. White & Associates, 300 N. State St., Chicago, Ill. 60610.

Oct. 3-4, Buffalo, N.Y. – Second Annual Sigplan PL/1 Forum. Contact: Dr. Robert F. Rosin, Computer Science Dept., SUNY, 4250 Ridge Lea Rd., Amherst, N.Y. 14226.

Oct. 10-12, Overland Park, Kan. – DPMA Division 4 Fall Conference. Contact: DPMA Kansas City Chapter, P.O. Box 2425, Kansas City, Mo. 64142.

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User Data Sought On Cobol Standard

MILWAUKEE, Wis. – The movement of "scientific" computers into the commercial area – and the potential impact this may have on standard software – has led to the suggestion that a Cobol is needed for systems like those made by Digital Equipment, Varian, Interdata, etc.

James L. Downs, manager of data communications systems at the Badger Meter Manufacturing Co. here, thinks that the proposed U.S.A. standard Cobol is "somewhat grandiose in stature" and certainly is unsuitable to the PDP-8s, PDP-9s, and PDP-10s that his company is using. Pointing out that the proposed standard Cobol has a range of more than 200 language levels between the minimum standard and the full standard, he is trying to find out which features of the full standard are of little value to the average Cobol user, which are desirable, and which are essential. His aim is to define a "standard" (most used or useful) Cobol subset.

A copy of his questionnaire is printed below. If you have not already received a copy and would like to participate, fill out the one below and mail it to: Cobol, Computerworld, 60 Austin St.; Newton, Mass. 02160. We will forward your answers to Downs.

Please check one box for each of the following:

	ESSENTIAL	DESIRABLE	UNIMPORTANT
1. Condition names: (level 88 items)	☐	☐	☐
2. The RENAMES feature: (level 66 items)	☐	☐	☐
3. Arithmetic formulas and the COMPUTE verb:	☐	☐	☐
4. Compound conditionals: A compound conditional is of the form simple condition and/or simple condition	☐	☐	☐
5. The VARYING option of the PERFORM verb.	☐	☐	☐
6. The ability to define arrays of greater than one dimension.	☐	☐	☐
7. The ability to define variable length arrays.	☐	☐	☐
8. The RESERVE ALTERNATE AREA option.	☐	☐	☐
9. The following declaratives: USE ERROR PROCEDURE USE LABEL PROCEDURE COPY library name	☐	☐	☐
10. The ability to segment and overlay parts of the program by means of priority numbers.	☐	☐	☐
11. The SEGMENT LIMIT Option.	☐	☐	☐
12. RANDOM ACCESS	☐	☐	☐
13. RANDOM PROCESSING	☐	☐	☐
14. The SORT verb.	☐	☐	☐
15. The REPORT WRITER feature.	☐	☐	☐

16. Would sorting by means of special commands to the operating system be an acceptable alternative to the SORT verb? YES ☐ NO ☐

17. Would the ability to write programs in RPG be an acceptable alternative to the REPORT WRITER feature? YES ☐ NO ☐

'Systems Effectiveness' System to Predict Needs

REDONDO BEACH, Calif. – The Systems Group of TRW Inc. is developing the software for an operations and maintenance data system which will allow Air Force and Army commanders to predict more accurately the requirements for advanced base facilities and system operating requirements.

TRW is working under a new contract totaling nearly $1 million with the USAF Space and Missile Systems Organization with support from the Army Material Command.

Predicated on the requirements for high performance aircraft and ground vehicles, the Systems Effectiveness Data System will give base commanders in both the Air Force and Army the capability of advanced computerized maintenance.

The project is the outgrowth of a series of earlier TRW projects including the Reliability Information Monitoring System, Reliability Information Monitoring System Capability Demonstration, System Experience Correlation and Analysis Program, and feasibility studies.

COMPUTERWORLD financial

New Registrations

CLARY CORP., 408 Junipero Serra Dr., San Gabriel, Calif., a manufacturer of data recording devices and other equipment, filed to register $1.5 million of convertible subordinated debentures due in 1983. Proceeds, with the price to be set, to be used for debt repayment and working capital. The underwriter is First Hanover Corp., 67 Broad St., New York, N.Y.

COM-SHARE, INC., 1919 W. Stadium Blvd., Ann Arbor, Mich., a time sharing service company, filed to register 225,000 common shares with warrants to purchase an additional 22,500 shares, to be offered in units of one share and one warrant. (Ten warrants will be required to buy one additional share.) Proceeds, at a maximum of $25 per unit, to be used for equipment, debt repayment, and working capital. The underwriter is Rodman & Renshaw, 209 S. LaSalle St., Chicago, Ill.

COMPUTER COMMUNICATIONS, INC., 701 W. Manchester Blvd., Inglewood, Calif., a computer communications peripheral products manufacturer, filed to register 200,000 capital shares. Proceeds, at a maximum of $12.50 per share, to be used for debt repayment, expansion, and other corporate purposes. The underwriter is Blair & Co., Inc., 66 Beaver St., New York, N.Y.

COMPUTER CONSOLES, INC., 317 Main St., East Rochester, N.Y., a manufacturer of communication computer related devices, filed to register 175,000 common shares. Proceeds, at $10 per share, to be used for equipment and working capital. No underwriter.

COMPUTING CORP. OF AMERICA, 2930 S. Lafayette Dr., Englewood, Colo., a computer service company, filed to register 50,000 capital shares. Proceeds, at $1 per share, to be used for equipment and working capital. No underwriter.

CYBER-TRONICS, INC., 4 Nevada Dr., New Hyde Park, N.Y., a seller and lessor of data processing equipment, filed to register 700,000 common shares. Proceeds, at a maximum of $16 per share, to be used for equipment. The underwriters are F.S. Smithers & Co., 45 Wall St., New York, N.Y., and Dominick & Dominick, Inc., 14 Wall St., New York, N.Y.

DATA NETWORK CORP., 460 Twelfth Ave., New York, N.Y., a computer facilities supplier, filed to register 175,000 common shares. Proceeds, at a maximum of $11 per share, to be used for expansion and working capital. The underwriter is Stralem & Co., 37 Wall St., New York, N.Y.

DATA PROBE, INC., 147 E. 50th St., New York, N.Y., a data processing service center operator, filed to register 100,000 common shares. Proceeds, at $5 per share, to be used for equipment and working capital. The underwriter is Alessandrini & Co., 11 Broadway, New York, N.Y.

DIGITAL EQUIPMENT CORP., 146 Main St., Maynard, Mass., a manufacturer of digital computers and electronics modules, filed to register 315,000 common shares, 100,000 to be offered by the company and 215,000 by a selling stockholder. Proceeds, with the price to be set, to be used for debt repayment and working capital. The underwriter is Lehman Brothers, 1 William St., New York, N.Y.

EDP RESOURCES, INC., 100 Park Ave., New York, N.Y., a software services provider, filed to register 300,000 common shares. Proceeds, with the price to be set, to be used for equipment and other corporate purposes. The underwriter is Dominick & Dominick, Inc., 14 Wall St., New York, N.Y.

ELECTRONIC DATA SYSTEMS CORP., 1300 EDS Center, Exchange Place, Dallas, Taxas, a designer and installer of business information systems, filed to register 650,000 common shares, 325,000 to be offered by the company and 325,000 by a selling stockholder. Proceeds, at a maximum of $16.50 per share, to be used for working capital. The underwriter is R.W. Pressprich & Co., 80 Pine St., New York, N.Y.

ENCODER RESEARCH & DEVELOPMENT CORP., 5 Rochester Ct., Huntington, N.Y., a developer and manufacturer of products used in digital computers and other electronic systems, filed to register 300,000 common shares. Proceeds, at $2.75 per share, to be used for equipment and working capital. The underwriter is Shaskan & Co., Inc., 67 Broad St., New York, N.Y.

INFOTEC, INC., 22 Purchase St., Rye, N.Y., a manufacturer of digital communications and computer peripheral equipment and systems, filed to register 250,000 common shares. Proceeds, at a maximum of $5 per share, to be used for equipment, expansion, and working capital. The underwriter is First Investment Planning Co., 1500 Massachusetts Ave., NW, Washington, D.C.

LECTRO COMPUTER LEASING CORP., 295 Madison Ave., New York, N.Y., a data processing equipment lessor, filed to register $3 million of convertible subordinated debentures due in 1984 and 75,000 common purchase warrants, to be offered in units of $1000 of debentures and warrants to purchase 25 shares. Proceeds, at full face value, to be used for equipment. The underwriter is Alessandrini & Co., 11 Broadway, New York, N.Y.

NORTHEAST COMPUTER INSTITUTE, INC., 54 Broad St., Red Bank, N.J., a company offering training courses in electronic data processing and office automation, filed to register 150,000 common shares. Proceeds, at $2 per share, to be used for equipment, expansion, and working capital. The underwriter is F.S. Donahue & Co., Red Bank, N.J.

Commercial Credit, Control Data Merge

MINNEAPOLIS, Minn. – Control Data Corp. stockholders approved the merger of Control Data and Commercial Credit Co., a large independent finance company incorporated in Delaware and headquartered in Baltimore, Md. Commercial Credit stockholders, meeting the same day in Wilmington, Del., also approved the merger.

New Company Formed

Under the terms of the merger agreement, which took effect Aug. 17, a new company comprised of the combined assets and businesses of the two firms was incorporated in Delaware.

Commercial Credit sold its assets to a subsidiary and changed its name to Control Data Corp. Its directors then resigned in favor of the Minnesota Control Data directors. Control Data of Minnesota then sold its assets to the new Control Data Corp.

The net effect was that Control Data came out on top with Commercial Credit as a wholly owned subsidiary.

According to Control Data Vice President Harold H. Hammer, the operation was just legal machinery to accomplish a simple merger, but will not entail any switching of staffs or headquarters. It will be "business as usual," he said.

Most In Favor

The Control Data vote was by 85% of the outstanding shares and the Commercial Credit vote in favor was by 79.5% of the outstanding shares.

It was reported that the more than one million Commercial Credit shares held by Loew's Theatres, Inc. and by persons friendly to it were cast in favor of the merger. Loew's, once a suitor for Commercial Credit, had acquired a large block of Commercial Credit stock through a tender offer it made in its fight for the company.

In late June, Loew's had tried to stop the proposed merger by filing suit in U.S. District Court in New York. Soon after filing suit, however, Loew's admitted defeat and subsequently dropped the suit.

CDC-RCA Contract

In theory, the merger made partners of Control Data and Radio Corporation of America, competitors in the computer manufacturing field. In January, RCA and Commercial Credit announced that they would form a new company to establish and operate computer centers in principal cities across the nation for time sharing and data processing service.

However, Hammer said that the RCA-Commercial Credit contract stipulated that if either company were to affiliate with a competitor of the other, the contract could be terminated. Either RCA can buy out Commercial Credit's 60% of the time sharing company or Control Data could buy out RCA's 40%, but nothing had yet been done about it, he said.

Control Data has plans to establish a nationwide network of time sharing centers, but not using RCA equipment nor based on where RCA would have put them, Hammer said.

As for RCA and Commercial Credit's time sharing company, the company is just a hollow shell that as yet has not done anything, he said.

[redacted]

MEMOREX

SANTA CLARA, Calif. – Sales of Memorex's magnetic media products reached record levels in the second quarter and produced per share earnings of 34 cents compared to 26 cents in the same period last year. For the last six months ended June 30, earnings per share were 56 cents compared to 48 cents for the first six months of 1967.

Net sales for the first half were $25,498,000 compared to $15,017,000 in the comparable period of 1967.

RAYTHEON

LEXINGTON, Mass. – Raytheon Co. net earnings for the quarter ended June 30 were $7,947,000 (54 cents a share) compared with restated earnings of $7,161,000 (49 cents a share) a year ago. Both periods reflect the recent 2-for-1 stock split and the acquisition of two companies early this year.

Sales in the second quarter – $294,866,000, compared with the restated $283,041,000 in sales a year ago – were the highest in any quarter in the company's history.

AUTOMATION INDUSTRIES

CHICAGO – Automation Industries, Inc. had first half sales of $40,461,095, up 53% over the similar period last year, and first half net income of $2,006,847 (71 cents a share), up 42%.

FARRINGTON

NEW YORK – Revenues of $6,192,000 for the second quarter, the highest for any three month period in the company's 57 year history, have been reported by the Farrington Manufacturing Co. Net income for the period ended June 30 was $224,000 (about 5 cents a share).

The second quarter revenues represent a 54% increase over revenues of $4,011,000 reported in the first quarter. Net income for the first six months was $245,000 (about 6 cents a share).

GREYHOUND COMPUTER

CHICAGO, Ill. – Greyhound Computer Corp.'s second quarter net income was $1,356,388 (32 cents a share) on revenues of $9,151,768, compared with 1967 second quarter profits of $953,230 (25 cents a share) on revenues of $5,601,692. Profits for the first six months were $2,634,989 (64 cents a share) on revenues of $17,176,288. The six month figures represent a 50% increase in profits and a 65% increase in gross revenues over the same period last year.

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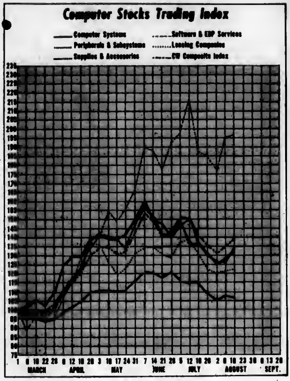

Computer Stocks, Market Finish Up

(Continued from Page 1)

over-the-counter industrial average, 401.83, up 6.70(1.7%).

Among the *Computerworld* listed stocks, gainers outnumbered losers for the second consecutive time in five weeks.

Volume Up

Volume for the week was 45,819,790 shares on the New York Stock Exchange, up from the previous week's 39,796,102 shares. On the American Stock Exchange, 20,047,160 shares were traded, up from 16,198,155 shares the previous week. Among the week's 20 most active stocks on the NYSE was Sperry Rand, which closed up 3.69% at 45-5/8 on 231,000 shares traded. Sperry Rand has been among the most active stocks for some time.

New Highs, Low

Among the *Computerworld* listed stocks, two issues closed at new highs for the year and one issue closed at a new low. The highs: Datamation Services closed at 26-1/4, up 11.7%, and Computer Exchange closed up 5.56% at 14-1/4. Management Assistance reached a new low, closing down 4.71% at 10-1/8.

Of the *Computerworld* listed stocks, 60 advanced, 28 declined, and nine remained unchanged. The previous week, 55 issues advanced, 31 declined, and nine remained unchanged.

Overall on the NYSE, 1038 issues rose, 507 fell, and 132 were unchanged, versus the previous week's score of 960 advances, 577 declines, and 136 unchanged. A total of 134 issues reached new highs and 40 dropped to new lows, as against the previous week's 92 new highs and 77 new lows.

Volume on the New York Stock Exchange of advancing issues was 6,010,000 shares and of declining issues, 2,830,000 shares. On the American Stock Exchange, the volume of gaining stocks was 3,070,000 shares and of declining issues, 1,300,000.

All CW Indexes Up

All of the *Computerworld* stock sector indexes showed gains during the week. It was the first time in weeks that all the indexes were up.

The Computer Systems index closed at 134, up 8 points(6.4%). Thirteen of the sector's stocks showed gains and only two showed losses, an encouraging change from a month ago when every stock in the sector closed off.

The Peripherals & Subsystems index closed at 132, up 4(3.1%); the Supplies & Accessories index, 107, up 4 (3.9%); the Software & EDP Services index, 197, up 2 (1%); and the Leasing index, 123, up 2 (1.7%).

Trading Commentary

As the stock market opened for the week Aug. 12, stocks swung upward on Vietnam peace hopes. Computers paced the glamor sector and the Dow-Jones industrial average showed its biggest daily gain in four months, 11.37 points.

Tuesday, computers were generally strong again. Market prices in general continued to climb, although not as fast as Monday.

Stock activity repeated a pattern which has become normal for Thursdays since the market started closing on Wednesdays to allow brokers to catch up on back paperwork: up in the morning and down in the afternoon. Computers were mixed.

However, Friday the market was up again.

COMPUTER STOCKS: TRADING SUMMARY

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	COMPUTER SYSTEMS	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
NYSE	165 5/8	220–157	207 1/8	• Burroughs	+ 3 5/8	+ 4.57	+ 28.70
NYSE	57 3/4	116– 54	54 1/4	Collins Radio	+ 1/8	+ 0.23	− 10.88
NYSE	101 1/2	174– 95	154 1/2	• Control Data	+ 5 1/4	+ 3.53	+ 52.21
AMSE	102	160– 95	130	• Digital Equipment	− 5	− 3.80	+ 25.39
NYSE	87 1/4	100– 81	92 1/8	General Electric	+ 5/8	+ 0.77	+ 5.56
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	• [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	• [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	• [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
NYSE	38 1/8	63– 34	36	Raytheon	+ 1/2	+ 1.41	+ 6.00
OTC	22 1/2	66– 38	45	• Scientific Controls Corp.	+ 3	+ 7.14	+ 100.00
NYSE	79 3/4	114– 72	96 3/4	• Scientific Data	+ 6 3/4	+ 7.05	+ 21.00
NYSE	45	63– 43	45 5/8	• Sperry Rand	+ 1 5/8	+ 3.69	+ 1.67
AMSE	33 1/2	38– 20	35 1/2	• Systems Engineering Labs.	− 1	− 2.17	+ 35.[illegible]

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	PERIPHERALS & SUBSYSTEMS	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
NYSE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
OTC	21	[illegible]– 40	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
NYSE	20	37– 18	20 5/8	Ampex	[illegible]	[illegible]	[illegible]
OTC	17 1/4	27– 15	18 1/2	Bolt, Beranek & Newman, Inc.	− 5/8	− [illegible]	− [illegible]
NYSE	10 1/2	[illegible]– 15	17	Bunker-Ramo	[illegible]	[illegible]	[illegible]
AMSE	30 1/8	66– 27	30 1/2	• Calcomp	− 1/2	− 1.35	+ 13.82
OTC	24 1/2	48– 20	48	Cognitronics	—	—	+ 100.00
OTC	12	17– 10	14 1/2	Computer Equipment	+ 1/8	+ 0.89	+ 17.71
OTC	15 1/4	23– 13	17	• Data Products	− 3/4	− 4.02	+ 11.47
OTC	19 1/4	27– 16	22 3/4	• Digitronics	+ 4 1/2	+ 2.34	+ 18.18
OTC	30	[illegible]– 32	[illegible]	• [illegible]	+ 1	[illegible]	[illegible]
OTC	10	20– 9	14 1/8	• [illegible]	—	—	[illegible]
OTC	34	71– 30	[illegible]	[illegible]	+ 1	+ 1.80	[illegible]
OTC	18 1/2	[illegible]– 18	[illegible] 1/8	[illegible]	+ 2 3/8	+ 1.80	[illegible]
AMSE	18 7/8	[illegible]– 18	37 5/8	[illegible]	+ 3 3/8	+ [illegible]	[illegible]
AMSE	57 1/2	130– 54	87 5/8	• Mohawk Data Sciences	+ 4 5/8	+ 5.57	+ 52.38
OTC	74	130– 71	96	• Optical Scanning Corp.	+ 2	+ 2.13	+ 29.72
OTC	18	42– 16	30 1/4	Photon	+ 4 1/2	+ 18.05	+ 68.05
AMSE	36 5/8	38– 20	37 5/8	• Potter Instrument	− 1 1/2	− 3.10	+ 4.52
OTC	40 1/4	98– 30	93	• Recognition Equipment Corp.	+ 8	+ 9.41	+ 131.05
AMSE	18	[illegible]	28 1/8	[illegible]	+ 1 5/8	[illegible]	[illegible]
NYSE	48 1/8	[illegible]– 40	48 1/4	Sanders	− 1/8	− 2.70	[illegible]
OTC	47	100– 60	90	[illegible]	− 5	− 5.50	+ 91.49
OTC	40 1/2	81– 38	47 1/2	• Tally Corp.	+ 1 1/8	+ 2.36	+ 17.[illegible]
NYSE	262 1/4	321–220	286 5/8	Xerox	+ 8 3/8	+ 3.36	+ 10.31

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	SUPPLIES & ACCESSORIES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	66– 37	48 1/2	43 1/2	• Acme Visible	+ 1	+ 2.35	− 10.31
NYSE	33– 18	25 1/2	18	Adams-Millis	− 1 5/8	− 7.05	− 7.32
OTC	21– 13	13 5/8	18 3/4	• Baltimore Business Forms	—	—	+ 27.61
AMSE	44– 31	27	35 1/2	• Barry Wright	− 5/8	− 2.34	+ 6.88
OTC	48– 29	31 1/4	35	Data Documents	—	—	+ 12.00
[illegible]	[illegible]	[illegible]	[illegible]	• [illegible]	[illegible]	[illegible]	[illegible]
NYSE	[illegible]	[illegible]	[illegible]	• [illegible]	[illegible]	[illegible]	[illegible]
NYSE	[illegible]	[illegible]	[illegible]	• [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	• [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
OTC	58– 35	31 1/4	47	Reynolds & Reynolds	− 1/2	− 1.05	+ 50.40
OTC	38– 34	35 1/2	34	• Standard Register	—	—	− [illegible]
NYSE	44– 30	27 3/4	35	• Uarco	+ 3 1/2	+ 7.93	− 9.94
AMSE	22– 13	14 1/4	18 7/8	Wabash Magnetics	+ 3 1/2	+ 13.02	+ 32.46
OTC	38– 34	35 3/4	39	• Wallace Business Forms	—	—	+ 8.73

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	SOFTWARE & EDP SERVICES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	[illegible]	[illegible]– 7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
OTC	17	[illegible]– 16	27 1/2	• [illegible]	+ [illegible]	[illegible]	[illegible]
OTC	10 1/8	[illegible]– 15	18	• [illegible]	− [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
OTC	4 1/2	20– 3	14 1/2	• Brandon Applied Systems	− 1/2	− 2.38	+ 222.22
AMSE	25 7/8	43– 21	22 1/4	Computer Applications	—	—	− 1.04
OTC	3	13– 7	12 3/4	Computer Environments	+ 1 1/4	+ 10.87	+ 310.70
OTC	25	60– 24	46	Computer Network	− 1	− 2.13	+ 83.28
AMSE	40	64– 35	47 5/8	• Computer Sciences	− 1/4	− 4.02	+ 19.04
OTC	35	60– 32	34 1/2	• Computer Usage	+ 3	+ 10.34	− 11.[illegible]
AMSE	[illegible]	[illegible]	[illegible]	• [illegible]	[illegible]	[illegible]	[illegible]
OTC	[illegible]	[illegible]	[illegible]	[illegible]	—	—	[illegible]
OTC	[illegible]	[illegible]	[illegible]	[illegible]	+ [illegible]	+ [illegible]	[illegible]
OTC	[illegible]	[illegible]	[illegible]	• [illegible]	[illegible]	—	[illegible]
AMSE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
OTC	35	66– 35	64	• Informatics	+ 3	+ 4.92	+ 83.38
OTC	21	38– 14	16 1/2	Matrix Corp.	+ 1	+ 6.80	− 25.30
OTC	11 1/2	61– 3	55	• National Computer Analysts	− 3	− 4.92	+ 404.34
AMSE	21	40– 25	35 5/8	Planning Research	+ 3/4	+ 1.85	+ 27.05
OTC	3	16– 3	11 1/2	Software Systems	− 1/4	− 2.10	+ 27.70
OTC	20 1/2	32– 12	18 1/2	TSS Computing Centers, Inc.	—	—	+ 20.05
OTC	60	157– 57	140	• University Computing	+ 10	+ [illegible]	+ [illegible]

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	LEASING COMPANIES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AMSE	[illegible]	[illegible]– 84	[illegible]	• Data Proc. Financial & General	− 1 5/8	− 1.40	+ 0.65
OTC	12 1/2	17– 3	3 1/2	[illegible] Rental	− 5/8	− 3.88	− 27.05
OTC	20	50– 18	40 1/2	Dearborn Computer	− 1/2	− 1.06	+ 100.00
OTC	19 1/4	16– 12	18 1/2	• DPA, Inc.	+ 2 5/8	+ 13.00	+ 47.17
AMSE	35 3/4	40– 37	38 5/8	• Greyhound Computer	+ 5/8	+ 1.38	+ 6.[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	• [illegible]	[illegible]	[illegible]	[illegible]
OTC	3	[illegible]– 4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AMSE	[illegible]	[illegible]– 18	[illegible]	• [illegible] Corp.	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]– 7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
OTC	14 7/8	16– 10	10 1/8	• Management Assistance	− 1/2	− 4.71	− 0.[illegible]
AMSE	41 5/8	53– 35	34 1/2	National Equip. Rental	− 5/8	− 1.80	− 16.[illegible]
AMSE	38	64– 35	40 1/2	• Randolph Computer Corp.	+ 5/8	+ 1.01	+ 10.75
OTC	16 1/2	40– 18	35	System Capital Corp.	+ 1	+ 3.00	+ 123.01
AMSE	10 7/8	16– 10	10 5/8	U.S. Leasing	+ 5/8	+ 2.07	+ 80.57

*Companies included in Computerworld's stock trading index for each sector.

New Recruitment Communications Let You and Your Company Be More Effective In Finding and Filling Jobs

By James G. Anderson

Happily employed or not, who can resist the temptation to at least skim through the recruitment ads in the trade publications serving your field, or explore the Sunday paper's "Help Wanted Section"? The recruitment ads have become a kind of national reading habit. But whether you read them out of simple curiosity, or with the serious intention of landing a better job, the information that appears in most of them is relatively sketchy and minimal. Usually because of space limitations, or the need to describe a number of openings in one ad, the data is limited to a brief outline of the job's duties and responsibilities, perhaps a hint of the projects and programs you can expect to work on, and the education and experience requirements.

There is of course a considerable advantage in being familiar with the company whose ad you're responding to, or in having done some homework on its current contracts or product mix before you apply. But chances are there isn't the time or opportunity to do this kind of research. You find yourself waiting until the interview with the company recruiter to find out firsthand what they have to offer – and whether or not it's really of interest to you.

Interviews Wasted

Again, if you're not acting out of curiosity and you're really anxious to investigate the company, you may find that your lack of information about it can work against you during the interview. If you start your conversation with the recruiter and exhibit little or no grasp as to what the company does and what its goals are, you're under a handicap as far as doing an effective job of selling yourself as the right man to fill the opening. Many well qualified applicants come away from interviews feeling that they burned up too much of the hour trying to ferret out facts and figures about the opening. The result was that there wasn't sufficient time or opportunity to articulate their talents, experience, and enthusiasm in terms of how well they could have handled the new job.

In turn, similar disappointment and frustration over interview results can be felt by recruiters themselves. After a concerted effort to portray their company's achievements and attractions, they find that talk alone isn't enough to present effectively their firm's case to a man they really want to hire. Many recruiters feel hampered in their hiring efforts because they simply don't have adequate means or media for preinterview "promotion" of the company to potential candidates. And during the interview, the lack of effective materials to help the recruiter verbalize and visualize a company program, department, or capability only further complicates his (and his company's) recruitment communications problem.

Firms Try Harder

Because of the highly competitive nature of recruiting today, many firms are taking a hard, analytical look at the way they present themselves to potential professional employees. Research on recruitment communications is being conducted among those who accept, or reject, their offers. Management is recognizing that the more in-depth information about its operations that it can get across early in the game to graduates and seasoned professionals alike, the greater chance the company has of attracting better qualified men and women. From the standpoint of communicating to prospective applicants, the entire recruitment process is becoming a sophisticated, complex educational and marketing effort. And recruiting is a marketing effort in every sense of the word. It requires the same high caliber communications media and tools that are used by the men who sell the same company's products or services.

Whether you're a current or future job seeker, this trend toward better recruitment communications can contribute measurably toward your effectiveness as a job applicant. For one thing, recruitment advertising itself is changing. It's becoming more applicant oriented. Those vague, shopworn phrases about "exciting challenges" and "rewarding opportunities" are giving way to ad copy that is written to document in specifics just what these challenges and opportunities are – in terms of the working environment, the company's major fields of interests, its abilities and advances in a given science or technology. A number of companies today are running full page recruitment ads in major magazines and journals which are really up to the minute reports on activities in everything from avionics to zoology. These ads make generous use of technical photos and illustrations, traces, charts, and diagrams. Interestingly enough, some of these ads concentrate on detailing the tantalizing R&D or engineering problems that the company's people are still trying to crack. It's a subtle but effective way of getting you involved, yet it does give you an accurate picture of what the company is up to. Moreover, it can start you thinking about how you personally could help them to open up an embryo science, or achieve a major systems breakthrough.

James G. Anderson heads James G. Anderson Associates, a Boston advertising and public relations agency active in recruitment advertising and literature. His firm also conducts research to evaluate recruitment communications between employers and professionals.

New Look

Recruitment literature has evolved from the limitations of the cursory, catalog-like treatment of a company's programs and products into a more comprehensive profile of the working life of its professionals. Instead of answering the question, "What's it like to work here?", recruitment brochures are being written and designed to answer the question, "Would I like to work here?" – by showing the company's sensitivity to the needs, talents, and preferences of the individual employee. In this vein, applicants have found that some of the most effective recruitment brochures are those that chronicle the careers of men and women in terms of their personal reaction and experience in evolving a career within the company.

As for visual aids, the standard public relations films, company capabilities, or product demonstration films are either too broad or too specific to be of great value in the individual interview environment. Some recruiters, however, have substantial libraries of color slides from which they can readily assemble a custom-made presentation on their company, relating to your field of interest. But visual aids, other than organizational and advancement route charts, are not as effective as recruitment ads and literature

(Continued on Page 17)

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School Committee Hears Suggestions

CHICAGO – The problem of formulating "measurable criteria" for evaluating the curriculum and teaching in private data processing schools was explored at the second meeting of the Private Data Processing Schools Standards Committee of the Data Processing Management Association.

John J. Marshall, Jr. of Honeywell EDP, Wellesley Hills, Mass., chairman of the subcommittee on school management and student recruitment, expressed the opinion of the entire industry in urging that schools be required to employ more ethical practices in recruiting students.

His group recommended that schools use written contract agreements to protect the student and themselves, and pre-test the applicant before admitting him to class in order to determine his capabilities and interest in data processing work. The subcommittee decided that day to day management of the school operations should be left up to the decision of the individual school. However, each school must present evidence of being financially sound so as to provide proper instruction, a solid curriculum, and a proper learning environment.

Defining Courses

In defining the schools' objective in training students, the subcommittee on curriculum development and implementation, chaired by Anton G. Myse, of the General Services Administration, Chicago, specified that the graduate of the data processing school should be employable at the entry level jobs, not as a qualified trainee. Rather than dictate the subjects to be taught and the manner of training, the subcommittee favors defining the various courses a data processing school could offer and setting the objectives that each course of training should achieve. Three categories of courses were considered: keypunching, unit records, and computer programming.

The placement function frequently publicized by the schools is not mandatory in a proprietary school and is illegal in some states, according to the subcommittee studying job placement of the graduate. However, where such a service exists it should serve to bring student and company together, stated Mark Sheldon, chairman of the placement subcommittee. The school should help the student gather samples of his work and prepare for the job interview and should offer the prospective employer cooperation in arranging interviews.

A report on the requirements of the director and instructors of the schools will be submitted in its entirety by subcommittee chairman George Smith of GE, Schenectady, N.Y., at the next meeting of the committee, Oct. 3-4.

New Recruitment Communications

(Continued from Page 16)

that contain hard data that you can study and evaluate.

As a serious applicant, it's up to you to take initiative to find out what informational materials are available on any company with an opening that attracts you. Recruiters will make a special effort to send these materials out to you well in advance, to help you to make an intelligent confirmation of your original interest in the job and the company and then to present your experience, abilities, and interests effectively as a good match for the job requirements.

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COMPUTERWORLD **education**

Private EDP School Opens On University's Campus

ST. LOUIS, Mo. – A Control Data Institute will be established at St. Louis University this fall, the first to be associated with a major university.

Initially the institute will teach a six month, 600 hour course in programming technology. A CDC 330 system will be installed in Des Peres Hall and classes will begin in mid-October.

The Institute's advanced data processing system will enable the university to offer an extended program of computer science and research while permitting Control Data to offer technical level training in computer programming to area residents. The system also will make it possible for the university's Yalem Computer Center to develop additional computer services and applications in proportion to the instructional and research needs of the university.

The system will provide a central computer facility for faculty and graduate level research on all three campuses of the university – the Frost campus at Grand and Lindell, the Medical Center, and Parks College of Aeronautical Technology. Initially the computer will be linked to a remote terminal installed at the Parks College Campus, and within a year, to a terminal at the Medical Center. Using remote terminals, students and faculty at these locations will be able to solve problems and retrieve data stored in the computer.

St. Louis was selected for the new institute because a rapidly expanding use of computers by area businesses has created an acute shortage of trained people.

Grant Will Enable College To Join Intercampus Net

RIPON, Wis. – Ripon College has been awarded a National Science Foundation grant of $17,700 for participation in a Joint Regional Computer Network centered at Illinois Institute of Technology (IIT). Ripon College will provide matching funds for about one half of the total cost of the project.

When the network is in operation, the Ripon campus will be linked with the computer in Chicago by Teletype.

The IIT program will enable Ripon to share ideas and programs with 20 other participating colleges and universities. A common library of programs will be maintained at IIT, and a full time programmer will aid the institutions. Instructors from Ripon will attend seminars at IIT to learn how to use the computer.

Computer Plots Swimmer's Course

(Continued from Page 1),

miles because of drift.

Chaffee ended up going too far to the south, but said afterward that it was probably just as well because it kept him in slightly warmer water. The water temperature where he swam ranged from 57 to 60 degrees, he said.

The weather during the swim was 20-25 knot winds with up to seven foot waves.

Tide Information Helpful

He almost quit about a mile from his goal when the tide ran against him. But, he said, with the tide charts he had plotted, he knew that by "really pulling" he could make it.

The last attempt to swim the Bay in the same direction Chaffee swam was made in 1915 by Henry Sullivan, the first man to swim the English Channel. He had to give up after nearly 24 hours in the water when the tide almost swept him out to sea.

Several attempts in the 1950s to swim in the opposite direction also failed.

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ICL Super 1908A Announced at IFIP

EDINBURGH, Scotland – ICL, appearing in public for the first time at the IFIP Congress here, took the occasion to announce a new super computer, the 1908A, which is said to be "one of the most powerful computers in the world."

A.L.C. Humphreys, managing director of ICL, said that the new computer arises from plans that International Computers & Tabulators Ltd. (ICT) laid, prior to its merger into ICL, "to meet large scale computer needs and reflects the greater pool of resources available to the new company, ICL." Humphreys noted: "I am convinced that we have the right formula, and that the 1908A will greatly strengthen the British computer industry, both in the home market, and, importantly, overseas."

ICL was created by the merger of ICT and English Electric Computers, Ltd. with financial backing from the Plessey Co. and the British Ministry of Technology. The merged businesses began operations officially as ICL on Aug. 11. With 34,000 employees and combined sales of $240 million annually, ICL is the largest organization not controlled from the U.S. in the commercial and scientific computer business. It has marketing activities in more than 70 countries around the world. One-third of its U.K. output is exported, and it is estimated that it has some 45 to 50% of the U.K. market.

$3.5 Million and Up

ICL's new computer, the 1908A, will cost $3.5 million and up, and is said to be more than 20 times more powerful than the Atlas, the most powerful British computer built to date. According to ICL spokesmen, the 1908A is designed to meet the large scale computing requirements of the early 70s. First delivery of the 1908A will not be made until 1972. ICL spokesmen said this delivery date was made necessary by the extensive software requirements of a machine the size of the 1908A. The Computer Board for Universities and Research Councils, and the Science Research Council, both British organizations, have announced they will order two 1908As and already have placed orders for the smaller 1906A system.

Humphreys said the marketing strategy of ICL was based on the intention of the company to honor its existing commitments to customers and, at the same time, to enhance and develop both the ICL 1900 and English Electric System 4 lines.

"Our present 1900 and System 4 customers will be offered enhancements to meet their growing and changing information processing requirements," he said. "In seeking new business, we will use the 1900 across a broad front, and in particular for large scientific users. We shall use System 4 for our attack on IBM 360 users, and in particular to meet sophisticated real-time requirements. The 4100 [from Elliott Automation] has an important capability in the field of computer graphics and for the small scientific users."

Key to Tape Unit

In addition to the new large computer, ICL announced a magnetic tape data recorder at the IFIP 68 Congress. The new unit is a self-contained keyboard unit for entering and verifying data on standard 7 or 9 track, half-inch magnetic tape, recording from 200 to 800 bpi. Standard features include dual program control for automatic alphabetic and numeric shift, duplication skipping, and right justification.

The data recorder is a joint venture between ICL and the Potter Instrument Co. of the U.S. It will be marketed in the U.K. exclusively by ICL. Deliveries will start in July 1969.

The arrangement reflects a growing commercial cooperation between ICL and Potter.

ICL's powerful new 1908A computer will use integrated circuits and multilayer boards employing matched interconnection technology, which was developed for the firm's 1906A. The picture shows the central processor of the 1906A computer where multilayer boards and integrated circuit modules can be seen.

Computers at Work Behind the Scenes

CHICAGO – CBS-TV coverage of the Democratic convention will include a computer to compile vote totals as the balloting takes place. The same system was used at the Republican convention in Miami Beach and performed successfully, according to Jason Levine, CBS news' manager of press information for the conventions.

The system gives vote totals for all candidates, and can show the number of votes allotted to a state, and how it cast them. It can instantly retabulate the votes if, after the completion of a roll call, a state asks for the floor and changes its vote.

CBS News is using a Digital Equipment Corp. PDP-8/S for the program.

A computer was used to keep tabs on people at the Republican convention. An RCA Video Data Terminal in the convention message center was connected to an RCA Spectra 70/45 at the Florida State Capitol Building in Tallahassee. Stored in the system was information on virtually everyone at the convention.

Committee Sees Hazard In a National Data Bank

(Continued from Page 1)

Health. He declared that "Many of the pressures generated by the need for information may well incline us toward viewing individual persons not really as persons at all, but simply as objects." He quoted Abraham Heschel: "Just as death is a liquidation of human beings, dehumanization is a liquidation of being human." Discussing the data center, Dr. Hilmar added "A federal data bank is obviously possible in a technologically advanced nation, but this may well demand our bolstering the individual's privacy and prerogatives, even, in some cases, at some painful loss in the efficiency of research or even the effectiveness of government operations."

The major argument against a full-scale data bank is that it would tend to make each American fearful and constantly on guard lest a spontaneous statement or act ruin his record forevermore.

The right of the public to privacy was recognized by the committee, which quoted Supreme Court Justice Louis D. Brandeis as saying that it was the "most comprehensive of the rights of man and the right most valued by civilized men." The committee went on to argue that the creation of dossiers by means of data processing systems posed a grave threat to the "constitutionally guaranteed rights of each American to express himself and his ideas freely." The constitutional rights concerned were defined during the hearings by Prof. Charles A. Reich of the Yale Law School who argued that a person had a right not to be defamed either by a machine or by a person, pointing out that the person does not know what is in the computer's file and so does not know what judgments people make on this basis. He further argued that this was denial of the constitutional right to confront those who make statements about you, to question them, to rebut, and to answer. The committee report included a specific extract of Reich's testimony where he said, "Here are people who are not even charged with crime, and yet who may be punished far more severely than the ordinary criminal. Here are people whose opportunity to have jobs, to earn money, whose reputations and everything else are about to be damaged forever, and they have no trial, no lawyer, no opportunity to find out anything. It seems to me without question a denial of due process of law to send forth bad information about a person in secret in that way."

Computer Values Recognized

At the same time the committee was at pains to show that they recognized the importance of computers and data processing. They commented that computers are indepensible to modern society, that they extend their intellectual capability, and will continue to occupy a given role in our structure against poverty, ignorance, and disease.

Little Effect Seen

An observer in Washington commented that while the phrasing of the report might well be apparently directed to all data banks, it was probable that it would have little effect outside the immediate consideration of the National Data Bank, unless some unexpected circumstances prevailed. The report was actually issued at the end of the session and observers commented that a number of other critical subjects, including the air traffic control crisis, were being studied. "A word for word study of the report might well not be too meaningful," one informed source told *Computerworld.*

ACM Conference to Open In Las Vegas on Aug. 27

(Continued from Page 1)

D. Jones, University of New South Wales, Kensington, Australia.

An international panel moderated by Dr. Walter Bauer of Informatics later will discuss trends and problems in the computer field.

The international session will be held during the conference's opening session, which begins at 9:30 a.m. Aug. 27.

The conference luncheon at 11:30 a.m. Aug. 28 will include an address by Ed Fike, lieutenant governor of Nevada.

Nevada, faced with unusual problems because of its heavy involvement in resorts and gambling, has established a nonprofit foundation, the Nevada Essential Environmental Design Study, to plan its future. Fika will discuss how the foundation is using computers and a systems approach to its work.

Conference Program

The conference program this year, instead of being planned around a central theme, has been developed along various lines of interest, including those expressed by the ACM's special interest groups and committees.

The fee will be $35 for ACM members, $60 for nonmembers, and $5 for students.

The exhibit area at the Las Vegas Convention Center [illegible] open from noon to 8 p[illegible] 27, from 10 a.m. to 8 p[illegible] 28, and from 10 a.m. t[illegible] Aug. 29.

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